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Management Plan

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Management plan for Makoshika State Park
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MANAGEMENT PLAN

FOR

MAKOSHIKA STATE PARK

Prepared under the supervision of

Don Hyyppa

Administrator, Parks Division

and

Keith Seaburg

Regional Supervisor, Region 7

by

David G. Conklin

Parks Planner

Montana Department of Fish, Wildlife and Parks

March 15, 1984

PREFACE

Planning for the future management of Makoshika State Park is an important step in "conserving the scenic, historic, archaeologic, and recreational resources" of the park while "providing for their use and enjoyment" as mandated by state law. The planning process and the management plan in particular also provides a forum for intradepartment and interagency communication and cooperation.

Management planning is not a static process but rather a dynamic on-going effort that must react to new and more comprehensive information as well as changes in population numbers and recreational patterns and preferences.

This management plan is an update of the plan prepared in June 1968 in cooperation with the National Park Service, and the department prepared plans of summer 1972, and July 1976. The goals, policies and objectives of management described in those plans are reaffirmed. However, new information has allowed a more comprehensive in-depth look at them resulting in additional management objectives and techniques in order to better achieve the park goal.

MAKOSHIKA STATE PARK MANAGMENT PLAN
TABLE OF CONTENTS

Section I. INTRODUCTION 1

A. Location and Setting 1

1. Region.....1
2. Makoshika State Park.....1

B. Physical Features.....7

1. Visual setting.....7
2. Geology.....7
3. Soils.....7
4. Surface water.....7
5. Ground water.....9
6. Climate.....9
7. Air quality.....10
8. Aquatic.....10
9. Wildlife.....10
10. Vegetation.....10
11. Mineral resources.....11

C. Cultural Features.....11

1. History and archaeology.....11
2. Transportation.....12
3. Utilities.....12
4. Sociological and economic profiles.....12
5. Recreation use.....13
6. Land use.....16

Section II. ISSUES AND CONCERNS 23

A. Introduction.....23

B. Key Management Issues 23

C. Public Management Preferences.....25

1. Recreation Survey.....26
2. Summary of Public Meetings.....29

Section III. MANAGEMENT GOALS AND DIRECTION 33

A. Management Goal.....33

B. Management Objectives and Constraints.33

1. Resource management and use.....33
2. Fish and wildlife management....34
3. Visitor use and facility development.....34

C. Future Management Direction 35

1. Resource management and use.....35
2. Fish and wildlife management....43
3. Visitor use and facility development.....44

Section IV. ACTION PLAN (Fiscal Years 1985-1987).....57

A. Funding Sources.....57

B. Operation and Maintenance.....57

C. Acquisition and Development.....60

Section V. LIST OF APPENDIXES 63

A. Fossils found in Makoshika

B. Land Capability Classification

C. Makoshika Wildflowers

D. Archaeological Report

E. BLM Land Use Recommendations

F. 1974 Recreation Survey Tabulations

G. Inventory of Communication Sites

H. Public Use Regulations

List of Figures

1. Makoshika State Park location 4

2. Existing park area.....5

3. Cedar Creek anticline.....8

4. Population changes for Glendive and Dawson County.14

5. 1980 population densities found at 20 mile intervals from Makoshika State Park.....15

6. Average income for Dawson County and Montana.....17

7. Percent of total personal income, for Dawson County, for selected industries.....18

8. Percent of total employment for different industries in Dawson County.....19

9. Makoshika traffic count.....20

10. Makoshika landmarks.....36

11. Significant resources.....37

12. Planning area land ownership status.....39

13. Planning area land ownership.....40

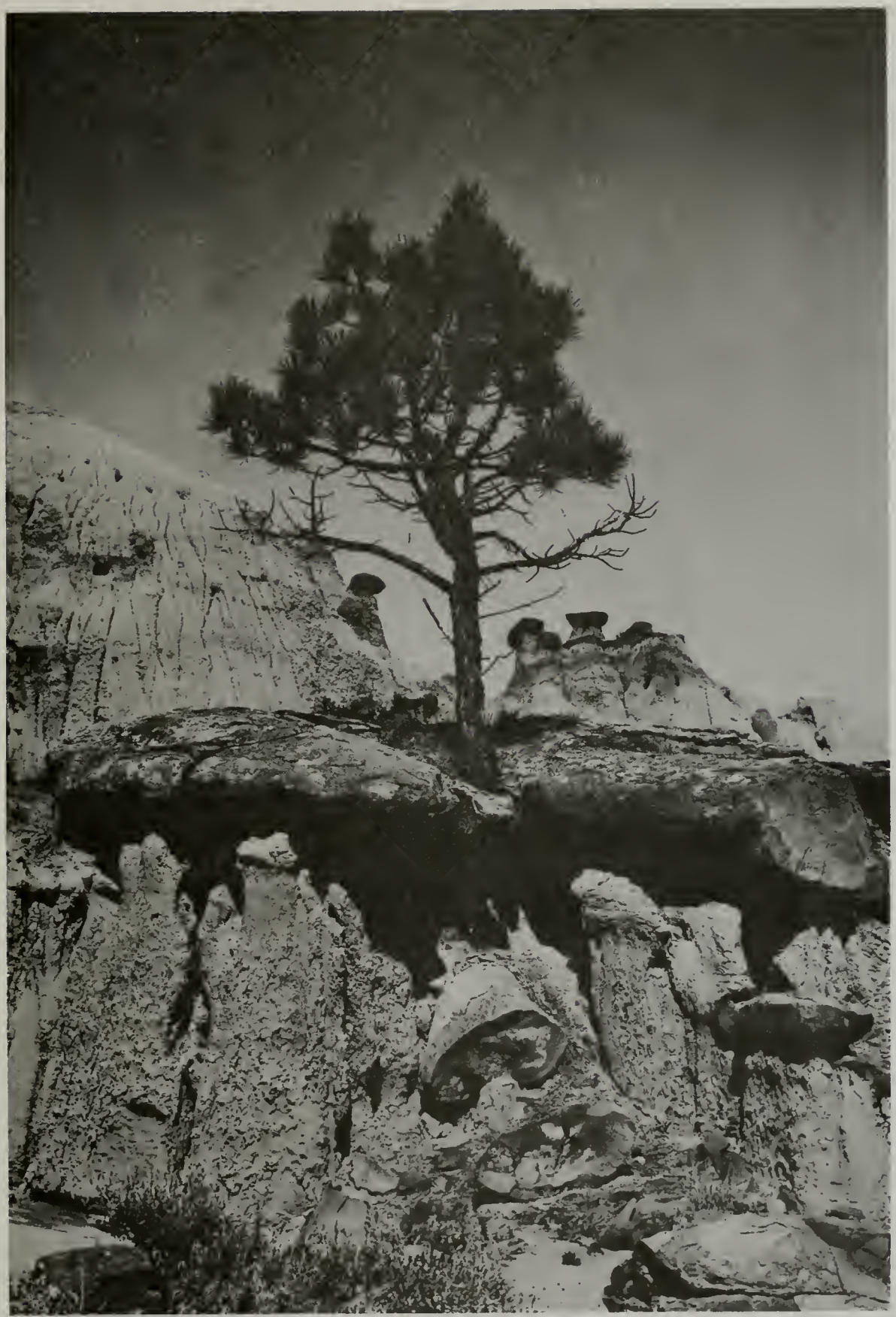
14. Federal mineral ownership.....42

15. Master development plan map key.....45

16. Master development plan and site plans.....46

17. Recreation development zones.....51

18. State funding sources.....58



Pondersosa Pine growing on sandstone concretion.

"Natural Bridge" along Cap Rock Trail.

SECTION I
INTRODUCTION

A. LOCATION AND SETTING

1. Region: Makoshika State Park is situated in Eastern Montana, near the North Dakota border (see Figure 1). Open spaces, vast distances and rather sparsely inhabited areas are all characteristic of this agriculturally oriented region. It is a zone of transition, ranging from the large expanses of grazing and ranch lands through dryland farming ares to intensively irrigated lands in the Yellowstone River Valley. The region is characterized by flat or rolling prairies, rough breaks, badlands and river flood plains.

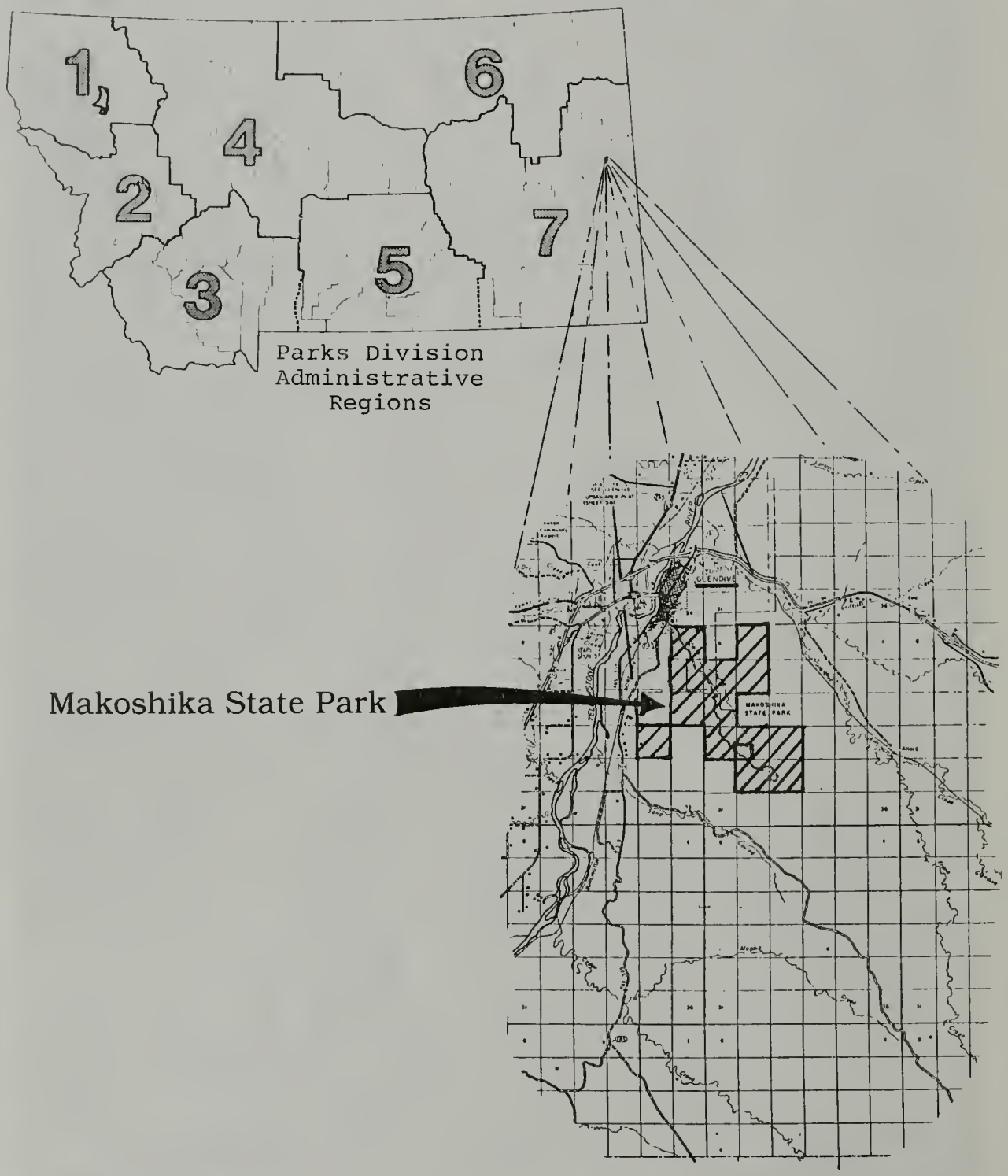
2. Makoshika State Park: Makoshika State Park is located in Dawson County, immediately southwest of the City of Glendive. A gravel road connects Glendive with the Park. Makoshika is a Sioux word meaning "bad earth" or "badlands." In 1939 Dawson County was donated a 160 acre park here. In 1953, the County in turn donated the park and leased an additional 80 acres to the Montana Department of Highways, State Parks Division. In 1958, approximately 624 additional acres were leased by the State Parks Division from the Bureau of Land Management under the Recreation and Public Purposes Act. Title to these lands is being transferred to the State of Montana in 1984.

   The Parks Division under the Department of Fish and Game in 1977 leased an additional 3120 acres from Dawson County and obtained road easements on 74 acres.

   Other transactions occurred in 1978, when the Parks Division purchased 650 acres using coal tax revenues. In 1983 and 1984 additional adjustments to the Park involved lease agreements on private land (160 acres), County property (1,280 acres), and a major land trade with the Bureau of Land Management (2,080 acres) and Montana Department of State Lands (640 acres).

   Thus, the actual management unit known as Makoshika State Park consists of 8,123 acres. As shown on Figure 2 Makoshika State Park represents only a fraction (14.5%) of the 56,000 acres of badlands southeast of Glendive. Makoshika also highlights the strategy of management control through leases and agreements. The State Parks Division has consolidated management of a

Figure 1. Makoshika State Park Location



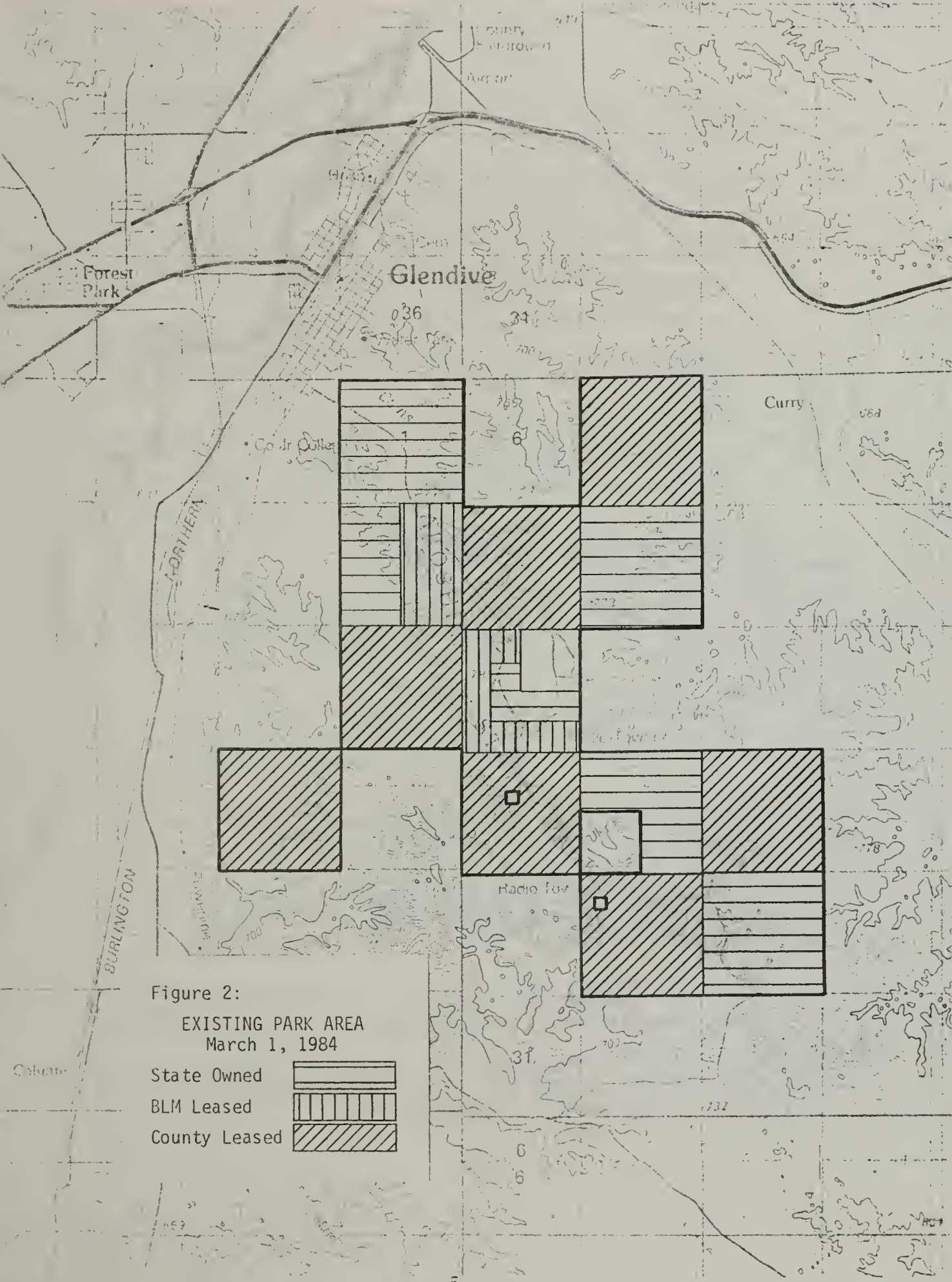


Figure 2:

EXISTING PARK AREA
March 1, 1984

land unit by entering into leases and agreements with Dawson County, the Federal Government and private landowners.

The hands of time have left their mark on the ancient sandstone exposures of Makoshika. Wrinkled and twisted facades are all that remain of landscapes eroded through the eons by wind and water. Dinosaurs once roamed the area and their descendents still sun themselves on the gray rocks.

Occasionally the forces of nature will expose the fossilized remains of some long dead creature who inhabited what was once a subtropical swampland millions of years ago.

Bones of fish, alligators, crocodiles, Tyrannosaurus rex and many other giants of pre-history have been found in the park, along with the fossil imprints of the trees and plants before their time. Some of them can be viewed at the Frontier Gateway Museum in Glendive. (See "Strange Beasts in our Backyard" in Montana Outdoors, Jul/Aug 1980).

The once lush grazing ground of dinosaurs is now a colorful badlands of sandstone and clay, sparsely covered with stunted juniper and pine. Wild flowers, more than 225 varieties, dot the Park.

The swampland turned badlands holds an oil pool of unknown extent. The mineral estate is in a checkerboard of ownership, including Dawson County, private owners and the Bureau of Land Management.

A gravel road traverses the Park, taking visitors past weather-warped rock formations and hills with their layers of geological age fully exposed.

The Park lures rock hounds, fossil hunters and geology buffs from all over the country. There is no visitor center but the Glendive Chamber of Commerce has pamphlets explaining the highlights of the Park.

The Montana Department of Fish, Wildlife and Parks has provided tables and fire grills for picnickers at several spots in the Park. Camping is also permitted.

The State Legislature has, during the last 10 years, allotted small amounts of money each session for basic improvements and land acquisition.

B. PHYSCIAL FEATURES

1. Visual Setting: The general area of the park lies approximately 400 feet above the Yellowstone River valley. The Park has deep washouts of various colored clays and shales with erosional features predominant over the landscape. Erosional features include thin columns capped with small sandstone rocks, vertical drop-offs and steep spires. Makoshika State Park cannot be comprehended in its entirety at any one instant or from any one point of observation. It is perceived through a flow of impressions.

2. Geology: The Makoshika Park area lies atop the Cedar Creek Anticline as shown in Figure 3. This is an area approximately 30 miles wide and extends from Glendive southeast across parts of North and South Dakota. In ages past this area was upthrust and subsequently eroded. Most of the Park area is underlain by the Hell Creek formation of Cretaceous age. Beneath the Hell Creek lies the Fox Hills Sandstone.

   The upper, or Colgate, member of this formation is a whitish colored sandstone containing numerous fossil plant specimens. Beneath are typically found massive, brownish sandstones grading downward into shaley sandstones. Beneath the Fox Hills Formation is found the Pierre shale. This is a dark gray shale with calcareous and ferruginous concretions and sand members. The Pierre shale is approximately 1800 to 2200 feet thick. The Hell Creek Formation, of which most of the Park is composed, is famous for its fossilized remains of extinct animal life (see Appendix A).

3. Soils: Soils in the Park range from fine, sandy loam with depths of more than 60 inches to silty, clay loams to clay. Some types of soils in the area are alkaline to very strongly akaline. Only very small areas of the Park are composed of soil types that are conducive to farming types of operations. All other types are mainly utilized for grazing and for scenic values (see Appendix B).

4. Surface Water: The Yellowstone River is approximately three miles west of the tablelands within the Park. There are no permanent streams in the Park area although it is dissected by numerous intermittent streams draining into the Yellowstone. The area also contains a few springs and small ponds.

Figure 3. Cedar Creek Anticline

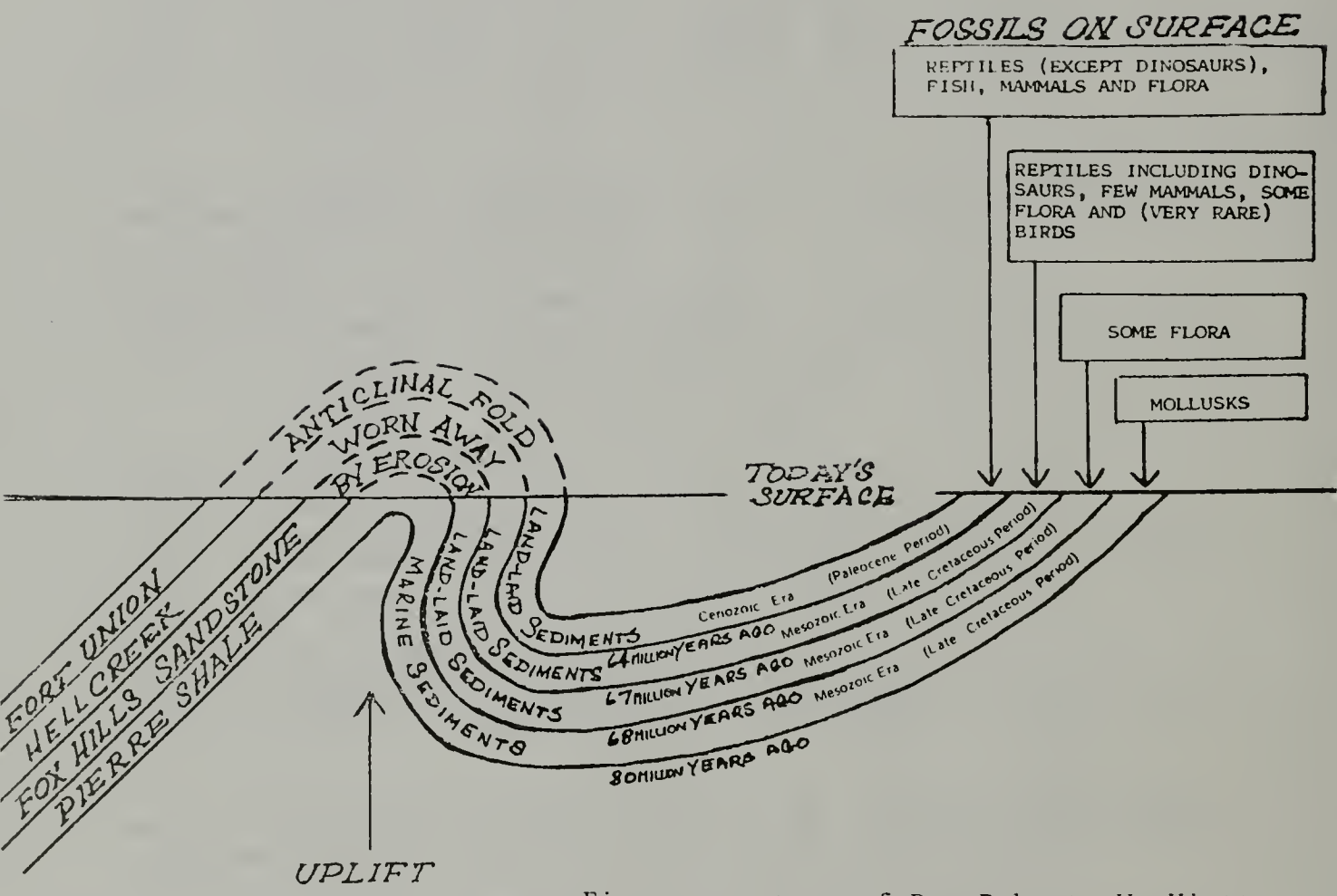

FOSSILS ON SURFACE
REPTILES (EXCEPT DINOSAURS), FISH, MAMMALS AND FLORA
REPTILES INCLUDING DINOSAURS, FEW MAMMALS, SOME FLORA AND (VERY RARE) BIRDS
SOME FLORA
MOLLUSKS
ANTICLINAL FOLD WORN AWAY BY EROSION
TODAY'S SURFACE
FORT UNION
HELL CREEK
FOX HILLS SANDSTONE
PIERRE SHALE
LAND-LAID SEDIMENTS
LAND-LAID SEDIMENTS
MARINE SEDIMENTS
Cenozoic Era (Paleocene Period)
64 MILLION YEARS AGO Mesozoic Era (Late Cretaceous Period)
67 MILLION YEARS AGO Mesozoic Era (Late Cretaceous Period)
68 MILLION YEARS AGO Mesozoic Era (Late Cretaceous Period)
80 MILLION YEARS AGO
UPLIFT

Figure courtesy of Dr. Robert W. Hiatt

5. Ground Water: The area is underlain by the Cretaceous Hell Creek Formation. Generally, this formation is not a good aquifer. It provides less than five gallons per minute in some of the lower sandstone lenses. Beneath the Hell Creek Formation is the Fox Hills Formation. The Fox Hills is approximately 175 feet thick and consists of an upper white massive sandstone unit commonly called the Colgate Sandstone Member. The Colgate is a good aquifer in this area. Yields of 15 to 30 gallons per minute are common.

Ground water in the Fox Hills lower Hell Creek aquifer yields a sodium bicarbonate or sodium sulfate type water which contains roughly 900 to 1500 parts per million total dissolved solids, 300 to 900 parts per million sodium, 500 to 1100 parts per million bicarbonate, 0 to 150 parts per million carbonate, 100 to 900 parts per million sulfate and 15 to 30 parts per million chloride. It is marginally suitable for drinking but not for irrigation.

6. Climate: The climate of the Makoshika Area can generally be described as continental with cold winters, warm summers and marked variation in seasonal precipitation. During a normal year about 90 percent of the annual precipitation falls during the April-September season. June is normally the wettest month, followed by July and May. Average precipitation lies in the 12 to 14 inches range. Average snowfall is approximately 28 inches per year. Summer precipitation normally occurs as showers and occasional thunderstorms. Winters can be cold but normally the very cold spells only last for a few days at a time.

Summers are characterized by warm weather which often lasts for weeks at a time. Sunny weather prevails 70 percent to 80 percent of the summer. Temperatures can reach highs of 90 degrees or more any month during May through September. In July and August on about half of the afternoons temperatures will reach 90 degrees or warmer. The growing season averages about 125 days. Flash flooding due to local thunderstorms does occur. These storms contribute greatly to the erosional features of the park area.

Temperature variations at Glendive range from a low of -50 degrees F in 1936 to a high of 117 F in 1893. The average January temperature of Glendive is 15.1 degrees. The July average is 74.8 degrees and the annual average is 45.6 degrees. Precipitation for Glendive varies from a low 4.83 inches to a high of 26.02 inches of moisture. Seventy-eight percent of the moisture for the Glendive area falls during the growing

season. The average annual precipitation for Glendive is 12.62 inches.

7. Air Quality: Dawson County is sparsely populated and generally lacking in heavy industry. Possible sources of detrimental materials are motorized vehicles, farming practices and the industrial activities of Glendive. No detailed studies of the area have been conducted; however, the air quality of the area is generally good due to the low population.

8. Aquatic: There are no perennial streams within the Park area but one or two small ponds exist on nearby private land which may have potential for stocking game fish.

9. Wildlife: The area is inhabited by both whitetail and mule deer, bobcats, fox, coyotes and numerous other mammals. Birds found on site include the sharptail and sage grouse, hungarian partridge, mourning dove, meadowlark, magpie, bluebird and various species of hawks and eagles. Also since about 1973 the Park has become an important summering ground for migrant turkey vultures who arrive in the Park on about April 15 and leave by October 15 each year. Over 50 vultures have been counted on roost trees near the Lions' Youth Camp (see "Turkey Vultures: Nature's Sailplanes" in Montana Outdoors, Mar/Apr 1982).

   No endangered species of fauna are known to exist on site. However, Merriam's wild turkey has been introduced nearby and a few have been reportedly seen in the vicinity. Also evidence has been found by local people that the extinct Audubon Bighorn sheep was once a resident of the area. Several horns and skulls have been found in the Park area (see "The Riddle of Existence: Audubon Bighorn Sheep" in Montana Outdoors, Jan/Feb 1980). A recent archaeological reconnaissance survey also revealed that the plains bison was similarly a past resident of the Park area.

   A herd of 20 to 30 wild horses also frequented the Park area east of Pine-on-Rock in past years. They were reported to be strays from the height of the horse-ranching period of 1915 to 1940 and were rounded up and removed sometime around 1950.

10. Vegetation: The Makoshika State Park area contains intermittent ponderosa pine - rocky mountain juniper woodland areas, chiefly in the Sand Creek vicinity. These trees are found growing mainly on the northern slopes and adjacent to coulee bottoms. Another interesting habitat type are the hardwood draws consisting mainly of green ash and boxelder. The

majority of the vegetation is grassland covered with sagebrush, greasewood, rabbitbrush and various wheatgrasses. Within these habitats over 225 species of wildflowers have been identified - a tremendous and possibly unequalled variety. A partial list is reproduced in Appendix C.

11. Mineral Resources: Connected with the Cedar Creek anticline mentioned earlier are numerous oil and gas deposits. Development of this field began in 1951 and has increased dramatically since 1980 in response to rising oil and gas prices and government incentives. The Hell Creek Formation itself contains numerous very thin coal beds. These are not of economic importance. Bordering the park and south of the town of Glendive lies a large deposit of bentonite which at this time has not been exploited.

C. CULTURAL FEATURES

1. History and Archaeology: Dawson County like many other areas in Montana, had its first contact with a non-Indian culture when visited by members of the Lewis and Clark expedition. Captain Clark on his journey down the Yellowstone River during the summer of 1806 camped overnight near the present town of Glendive. About a year later Manuel Lisa and John Colter passed through the area on their way to the mouth of the Bighorn River where Lisa established a trading post. In 1856 the area was visited by Jim Bridger. No sites of historical significance are presently known to exist in Makoshika State Park itself. However, an archaeological site of major significance is located adjacent to the park on the Yellowstone River. The Hagan Site, a registered National Historic Landmark, is the location of a late prehistoric earth lodge village, believed to represent the furthest west settlement of the Hidatsa-Crow Indian culture during their transition from farming to nomadic bison hunters. In 1938 partial excavations of the site revealed a midden area of more than ten acres. Storage pits, implements and human bones have been found on this site.

Eastern Montana was widely used by vast herds of buffalo, elk, antelope and deer. Native Americans were associated with these animals. Therefore, it must be assumed that archaeological sites could be found anywhere within the county.

In 1979, the State Parks Division commissioned an archaeological reconnaissance survey of the park area. Bones of deer and bison were found as well as projectile points from the early, middle and late prehistoric periods (see Appendix D).

2. Transportation: Glendive is a transportation center served by Interstate 94 and Federal Highways 10, 16 and 20. Glendive also lies on the main line of the Burlington Northern Railroad. Commercial air transportation services are provided by Big Sky Airlines. Bus transportation is provided by Greyhound buslines. Between the badlands and the Yellowstone River on the west edge of the Park are the Marsh Road, Burlington Northern tracks, and utility and buried gas lines.

3. Utilities: Electrical and gas service to the Glendive area is provided by Montana-Dakota Utilities. The city of Glendive provides sewer and water services to the community. Within the Park itself there is a 7200 volt transmission line and poles that carry both power and telephone from Glendive to the radio and TV towers. There are no other utilities within the Park boundaries. On the west edge of the Park area an underground gas pipeline and substation parallels the Burlington Northern Railroad and the Marsh Road.

4. Sociological and Economic Profiles: Recreation use surveys conducted in Dawson County and surrounding areas (called Planning Region 2), revealed that recreationists felt the condition of facilities within the Region were considerably below the state average.

   Use by Glendive residents and use from nearby counties predominates and most people use areas where they can do a specific activity or where they are close to home. Many are family groups and are frequently on one-day excursions. Out-of-state visitors are not prominent users of parks within the Region with the exception of Makoshika. Poor access roads are often cited as a factor.

   Residents of Glendive and the immediate vicinity are clearly much better informed about Makoshika and, of course, use it much more frequently than residents living outside the Glendive area.

   Population -- Dawson County had a 1980 population of 11,805 with Glendive contributing 5,978 to the County population. Between 1950 and 1960, Glendive's population increased 34.3% as the City responded to the growing importance of government, oil, electricity, and the railroads. The growth of the fifties was followed by a decline in the sixties of 10.7% and a further decline in the seventies of 5.2% to 1980. This loss in the 60's was due to the slowdown of the oil boom and the decrease in railroad activities. This gradual decline in population is typical of agricultural

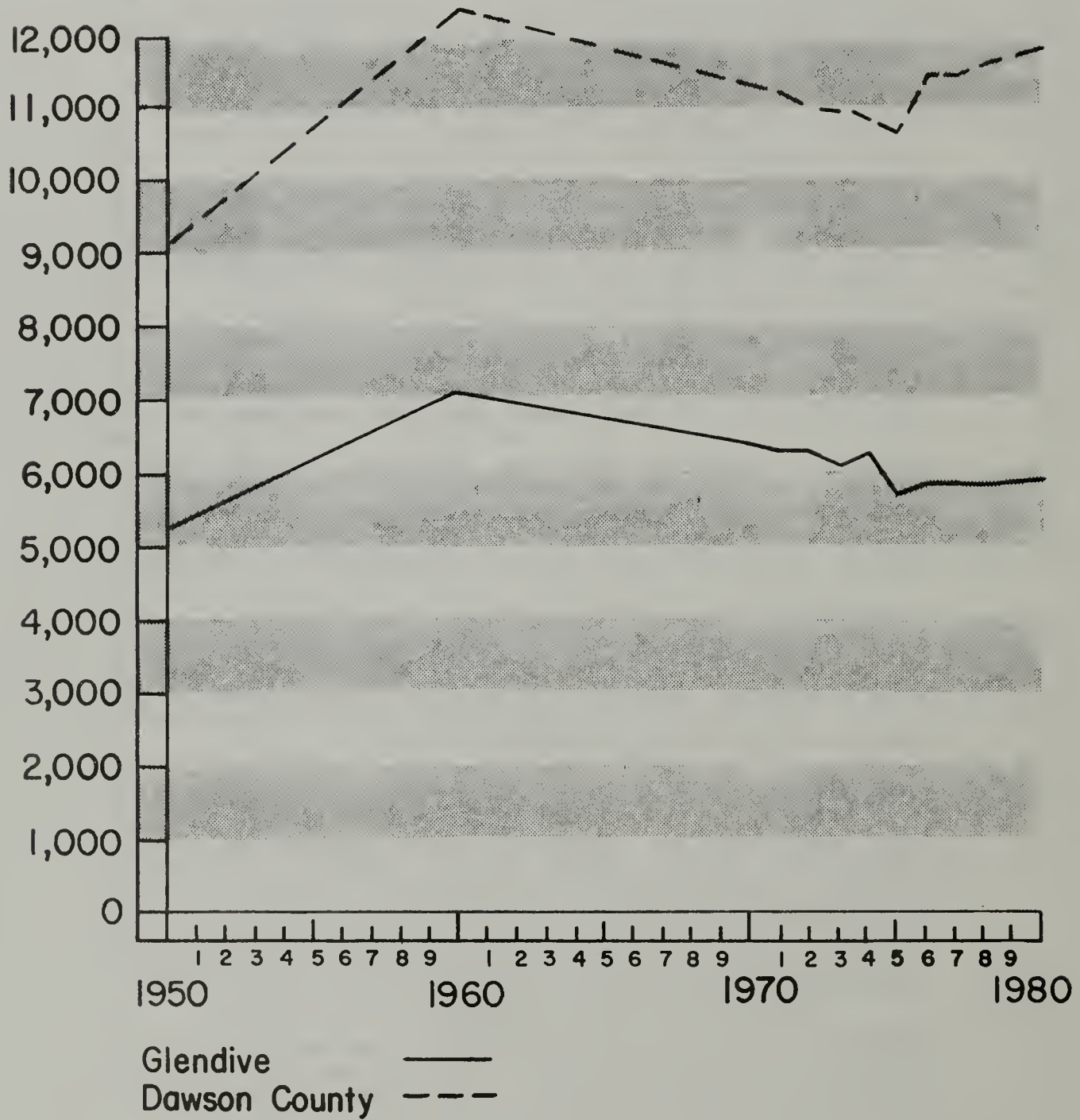
counties in Montana (see Figure 4). A turnaround in this downward trend in the late 70's and early 80's was primarily a result of increased energy exploration and development in the region. In 1980, there were 10,253 people within a 20-mile radius of Glendive, within 40 miles there were 17,678 people, and within 100 miles there were 111,077 (see Figure 5).

Income -- Dawson County has an agrarian-based economy. Average income for individuals in the county is approximately $1,000 below the state average. Income for individuals in the county is increasing, but it is not increasing as rapidly as the state average (Figure 6). Personal income by selected industry in 1972 was led by transportation and utilities. This commercial segment accounts for 35% of all personal income in the county. Major contributors to this industry are the Montana-Dakota Utility Company, oil distribution from the Williston Oil Basin, and railroads. Income from farming has dropped drastically since 1973 when it was remarkably high. Employment by type has remained very stable since 1968 with wholesale and retail trade making the most gain in percent of employment. Transportation, communications, and utilities are no longer the major employers, although trade, farming, services, and government are all within 7% of each other. Thus, the economic environment of Dawson County is basically agricultural with Glendive a major contributor to the county's economy. Several industries are basic to the local economy; for example, oil, electricity, and railroads. Dawson may be considered as typical of the eastern counties of Montana in that it lags behind the rest of the state in the amount of income (Figures 7, 8).

5. Recreation Use: During 1975 it was estimated that 82,000 people visited Makoshika State Park. Of this total approximately 40,000 of them visited the park in the summer. Approximately 21,000 people visited during the fall and another 21,000 during the spring. The average party size for visitors to the park was four persons. Thirty percent of the visitors to the site were from out of state. The majority of the rest of the visitors were from the local area.

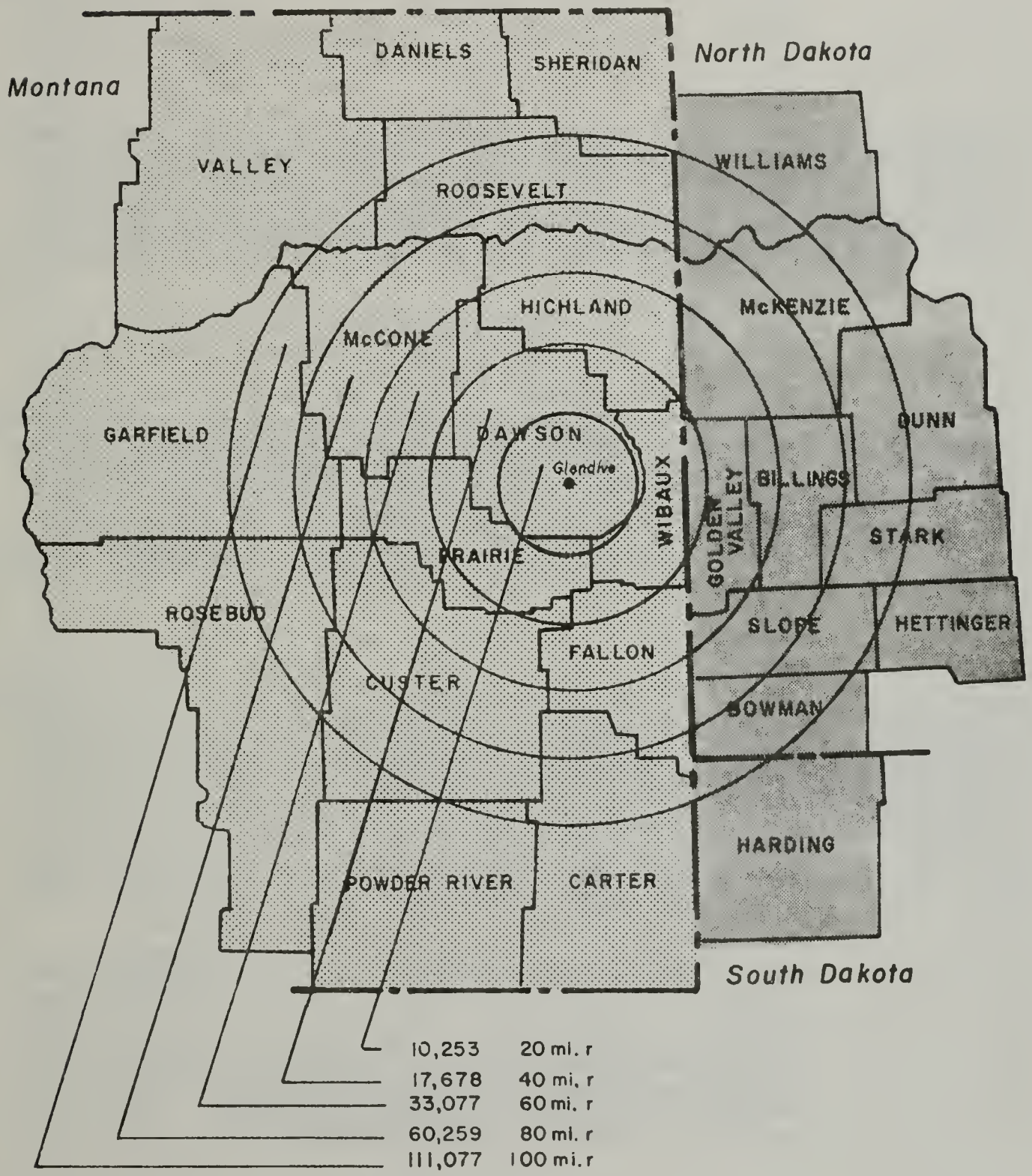
Monthly traffic counts made during the summers of 1977 and 1978 shown in Figure 9 indicate that use is increasing yearly but is variable and seasonal depending mainly on weather and road conditions.

Figure 4 Population changes for Glendive and Dawson County from 1950 to 1980



Source: U.S. Census & Population Estimates U.S. Bureau of the Census

Figure 5 1980 Population densities found at 20 mile intervals from Makoshika State Park



Visitor surveys conducted by the Youth Conservation Corps at Region 7 parks in 1978 found an average of 2.95 visitors per vehicle entered Makoshika which was above the regional average of 2.87. Traffic counts taken in 1980 accounted for 44,985 visitors to Makoshika between May 24 and September 30 alone despite very poor road conditions on the switchbacks after a landslide in April 1978. Studies conducted by the Department of Fish, Wildlife and Parks indicate that most people visit Makoshika State Park for picnicking, with scenic views being a second reason and rest and relaxation a third. The average respondent to a survey done in 1974 indicated they visited the Park about six times a year. The most desired improvements requested by the recreationist were improved roads and source of potable water.

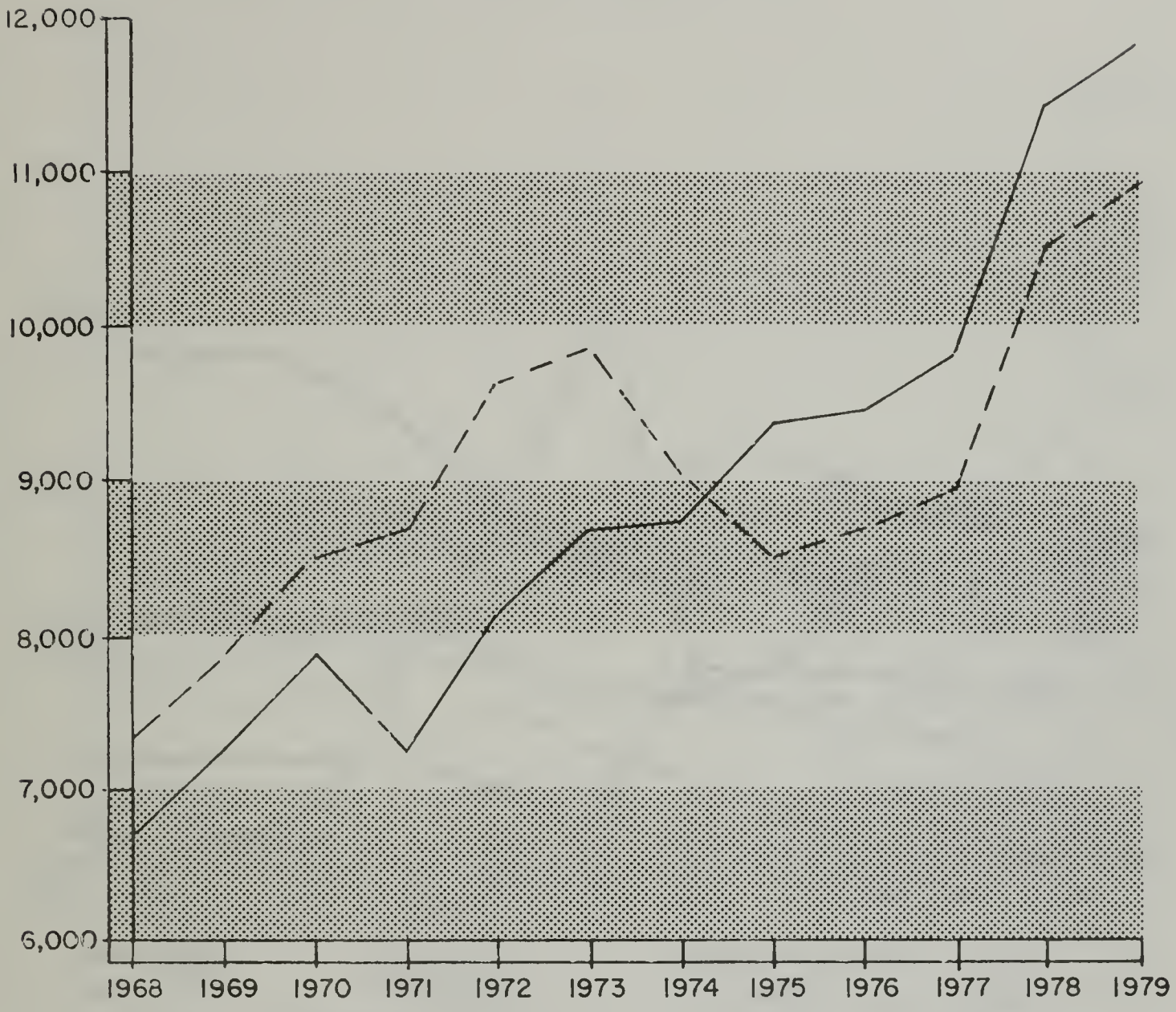
6. Land Use: The primary attraction for the visitor to this Park are the badlands formations, characteristic of much of the region lying south and east of Glendive. The Park encompasses the more scenic of these areas and the visitor has the opportunity to observe these close at hand and enjoy the more extensive views from the higher elevations. The rugged terrain and the fragile nature of the resource dictate the pattern of development. The predominance of the steep slopes, cliffs and otherwise irregular topography leaves a rather limited area for facilities. Therefore, Park use is dominated by these considerations.

Present use of the Park area is largely devoted to recreation. Recreational pursuits consist of picnicking, hiking, camping, sightseeing, driving for pleasure and other similar activities. Surrounding lands and private inholdings are used for livestock grazing. Within the boundaries of the Park are 14 radio towers, TV towers, shortwave broadcasting towers and reflectors.

The land for many of these towers was leased to private and public organizations by the Bureau of Land Management prior to the time it was obtained by the State Parks Division for recreational purposes.

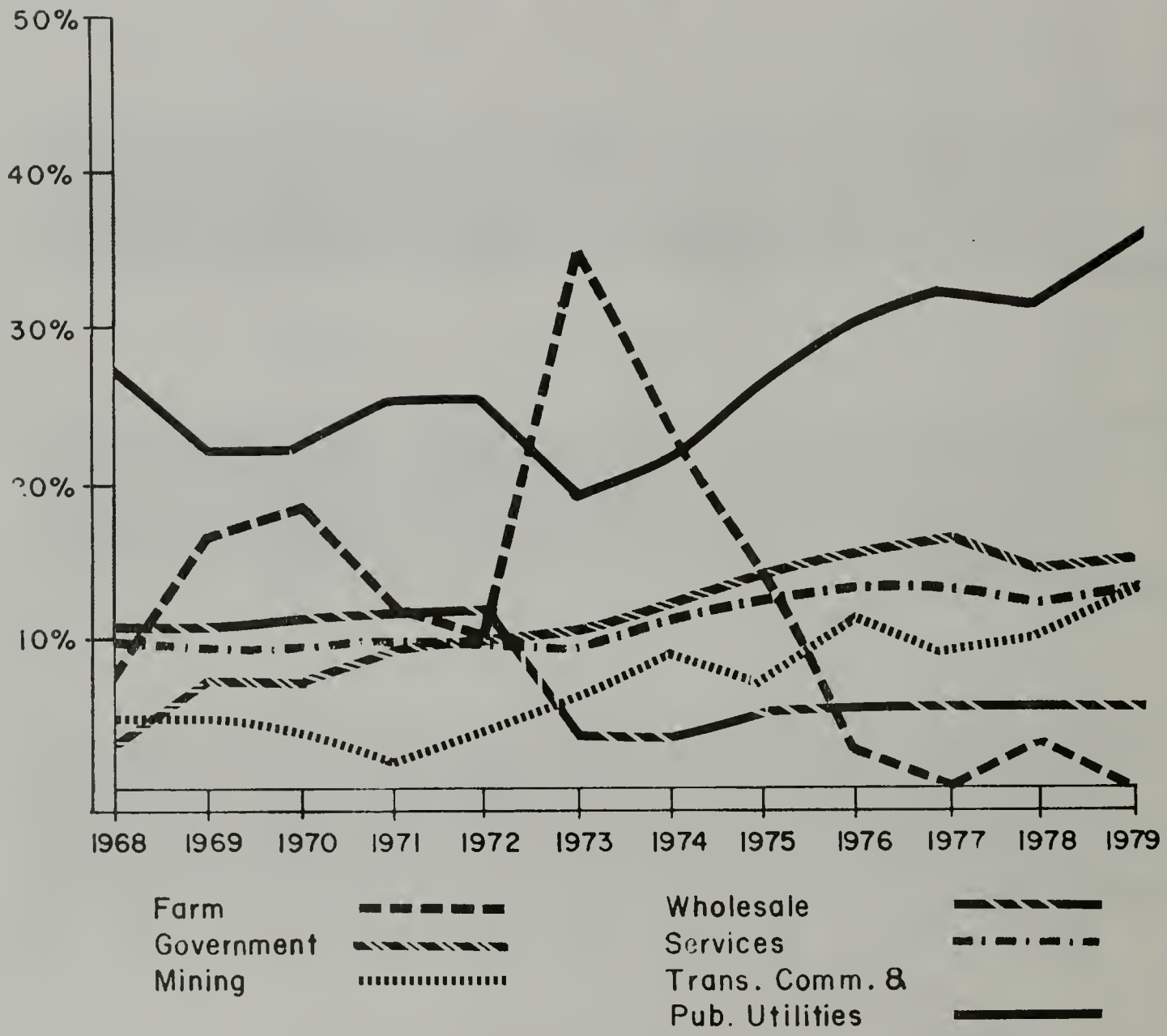
The Bureau of Land Management, U.S.D.I., has completed a Management Framework Plan for the lands they manage adjacent to Makoshika. The entire Park including the Yellowstone River section was identified as a Visual Resource Management Class II area representing unique or quality visual elements which deserve protection to maintain the quality of existing features. These land use recommendations are outlined fully in Appendix E.

Figure 6 Average income for Dawson County and Montana from 1968 to 1979



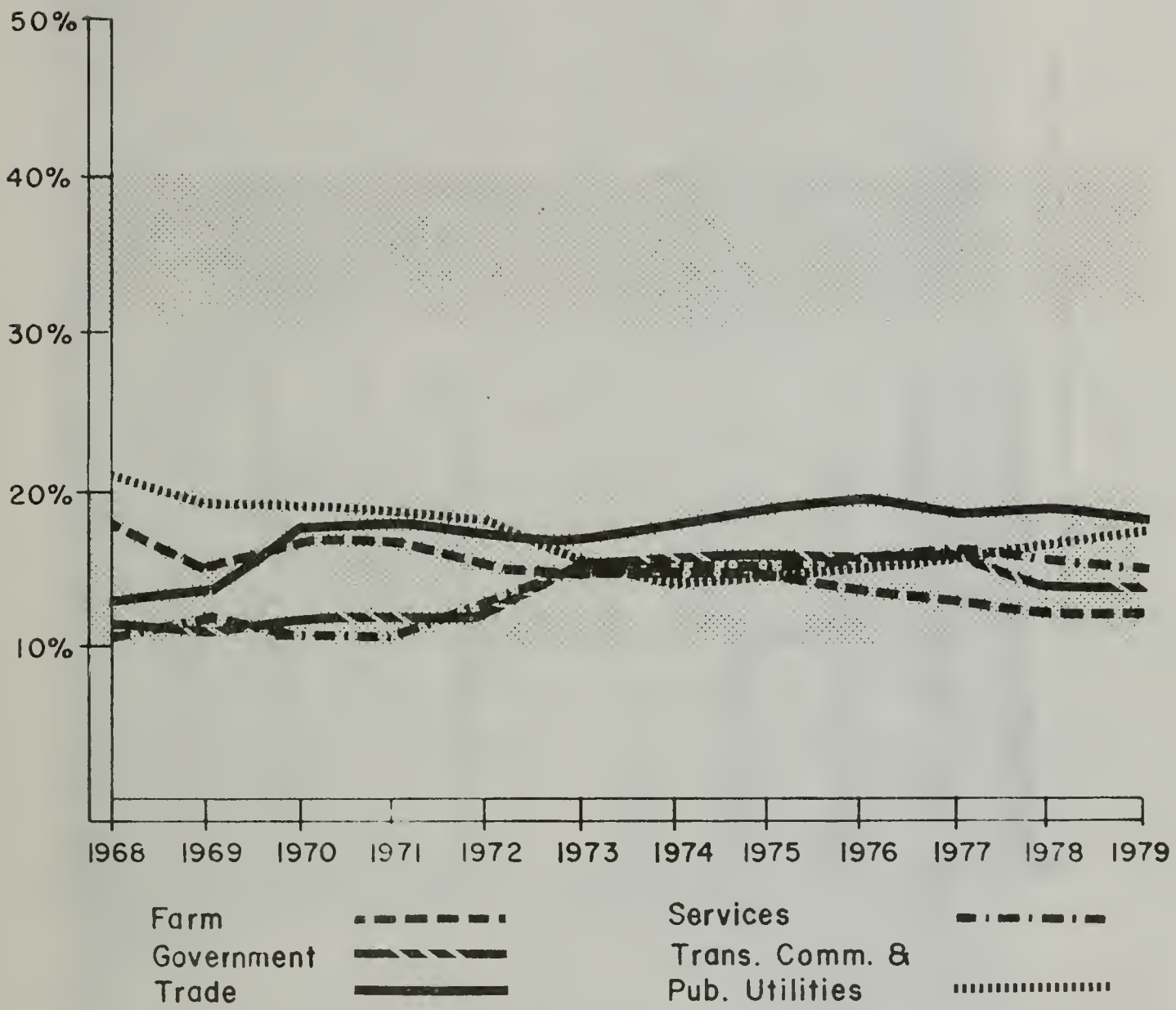
Source: Unpublished data from U.S. Bureau of Economic Analysis, Regional Economic Information System. (REIS)

Figure 7 Percent of total personal income for Dawson County for selected industries



Source: Unpublished data from U.S. Bureau of Economic Analysis, Regional Economic Information System. (REIS)

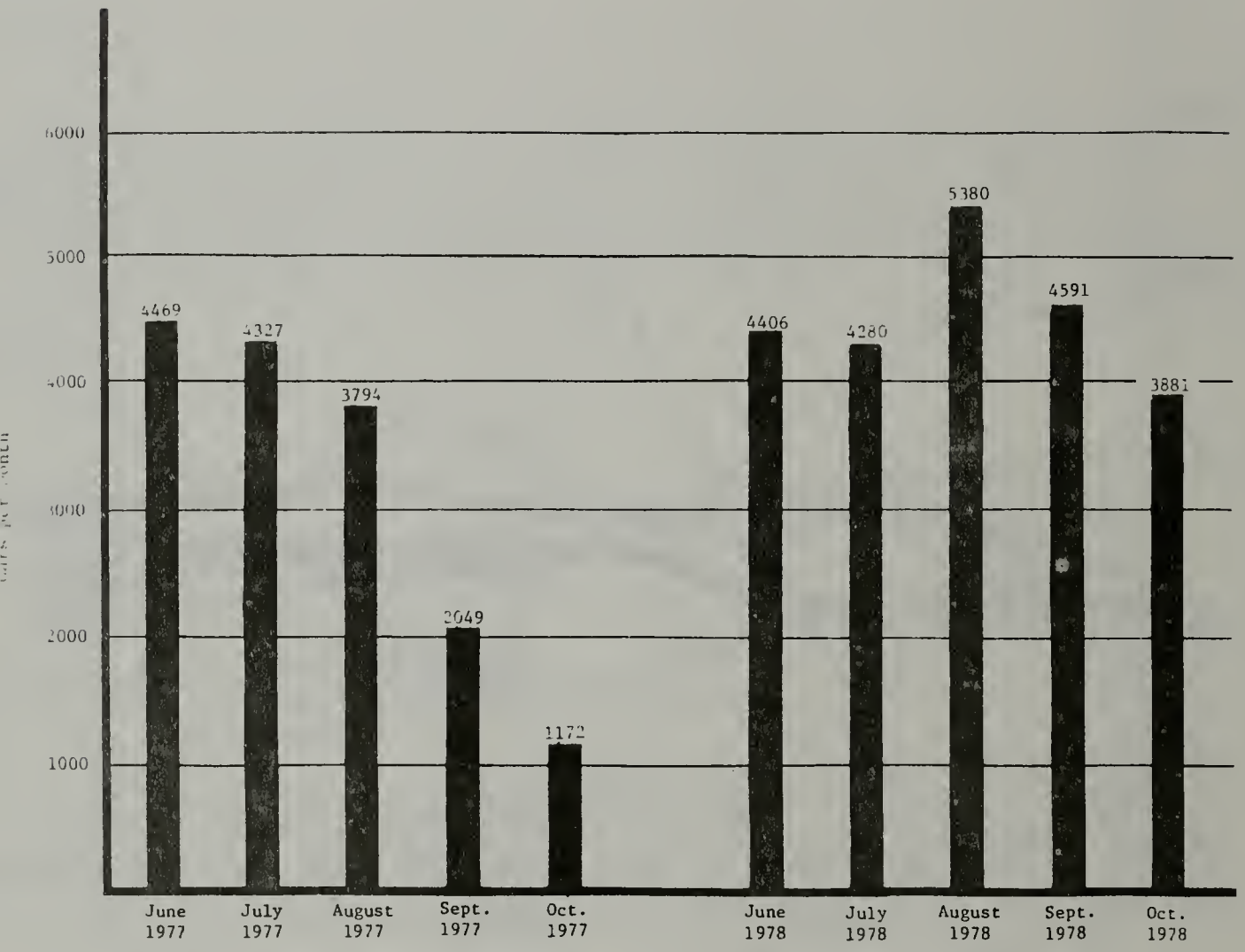
Figure 8 Percent of total employement for different industries for Dawson County



Note: Non-farm industry figures do not include owners, therefore percentages may be slightly understated.

Source: Unpublished data from U.S. Bureau of Economic Analysis, Regional Economic Information System. (REIS)

Figure 9 Makoshika traffic count



Coyote tracks in Kinney Coulee.

Early day tourists. (A.S. Foss collection)

SECTION II
ISSUES AND CONCERNS

A. INTRODUCTION

The major natural features of Makoshika State Park are of geological origin. The Park encompasses an outstanding erosional area of badlands-type topography that is very rich in fossil remains. A wide variety of plants and animals which are native to the badlands habitat also provide an interesting facet of the Park's interpretive story. This variety continues from the top of the tablelands in the central portion of the park down to the Yellowstone River bottomlands adjacent to the western edge. As such, the Park area preserves and highlights both badlands and riparian ecosystems.

In addition to the natural features, the area plays an increasingly important role in providing for recreational opportunities for the surrounding communities.

Makoshika already serves as a scenic haven for hikers, picnickers, campers, "fossil hounds" and even bird watchers wishing to escape to its pine-scented breaks. The breezes that cool and refresh recreationists also offer exquisite thermals for birds of prey. However, the Park must meet the demands of more and more people as energy development continues in the Glendive area. Some of the energy development planned or taking place now include: sizeable oil and gas leasing and exploration activity; Tenneco Coal Company's 880-megawatt coal-fired power plant in Wibaux County; and Burlington Northern's coal oil plant in Glendive itself.

The Montana Department of Health and Environmental Sciences recently reported that "significant environmental degradation" is a likely by-product of these development projects. Makoshika State Park must become a focal point for serving recreational needs on a regional scale if the quality of life for the people of the area is to be maintained in the face of changing times and new social pressures.

B, KEY MANAGEMENT ISSUES

Park and recreation management issues, concerns and preferences have been identified, discussed and evaluated over the past fifteen years using a variety of data sources and analysis methods.

These data sources include:

1. Makoshika State Park Management Plans (1968, 1972, 1976)
2. Montana Statewide Comprehensive Outdoor Recreation Plans (SCORP) (1969, 1973, 1978, 1983)
3. Dawson County Comprehensive Plan as updated.
4. Federal Bureau of Land Management Resource Assessments and Management Framework Plans as updated.
5. Federal Bureau of Reclamation Resources of Eastern Montana Basin Study (1972).
6. Missouri River Basin Comprehensive Framework Study (1971).
7. Energy Development Impact on Outdoor Recreation Study (1981).
8. Old West Regional Commission Yellowstone Impact Study (1977).
9. Youth Conservation Corps Makoshika Visitor Survey (1978).
10. Regional Recreation Survey (1974).
11. Glendive Chamber of Commerce Park Committee Meetings (1974).
12. Newspaper articles and editorials written by the Glendive Ranger Review.
13. Joint Bureau of Land Management/Department of Fish, Wildife and Parks Public Meeting (1982).
14. Joint Department of State Lands/Fish, Wildlife and Parks Public Meeting (1983).

During this time several key management issues have emerged as a common thread within all of the formal and informal documents, reports, meetings and surveys that have addressed the Makoshika area. They are prioritized and described below.

1. Land Ownership Status Within the Park: The existing park area (see Figure 2) consists of lands which are controlled by Federal (BLM, Department of Energy), State (Fish, Wildlife and Parks), County and private landowners. Mineral ownership is checkerboarded among Federal and private ownerships with the State Parks Divsion owning no minerals under its surface ownership. Furthermore, the State Parks Division has only short-term leases or easements on some Federal, County and private lands for recreation purposes. None of these agreements provide for exclusive management control; and often grazing, oil and gas development, utility corridors and communications sites are leased independently.

2. Park Size and Expansion: Only a small portion of the 56,000 acre badlands area southeast of Glendive has formal park status or protection. Many existing roads, trails and scenic views are located off of park lands. The majority of the badlands ecosystem lacks any

consoldidated management control, direction or purpose. Maintenance as well as development of park facilities to respond to public management preferences is ineffective without assurance of long-term access to and management of the lands needed for recreation.

3. Park Intrusions: Existing and potential physical intrusions create negative values and detract from the recreational goals set for Makoshika. These intrusions include overhead utility lines, communication sites, oil and gas exploration and development, uncontrolled livestock grazing, private recreation and home sites, and dryland farming activities. If not eliminated or controlled carefully, intrusions have the potential to severely compromise park management goals and objectives.

4. Recreation User Conflicts: The limited size and accessibility of the existing park area provides many opportunities for an increasing number of conflicts between recreational users themselves. The most noticeable conflicts occurring presently involve off-road vehicle users and sightseers; fossil hunters and scientists; and small-group passive activities and large-group parties. Conflicts will continue to increase unless separation of uses can be achieved. Physical separation and facility development will require additional recreation space.

The above issues and concerns were identified from the data sources listed earlier. These same sources provided a means for discussion and comparison of alternatives for dealing with these issues. The best and most complete discussion of alternatives was provided by data sources 10 and 11 which are described below. These efforts provided the basis for the development of specific public management preferences.

C. PUBLIC MANAGEMENT PREFERENCES

During the early 1970's the Department of Fish, Wildlife and Parks conducted several issue-oriented surveys and public meetings. The regional emphasis highlighted a six county area (i.e. Dawson, Richland, Wibaux, Prairie, McCone and Garfield) plus more precise information on Makoshika State Park. A summary of the findings is reviewed below.

1. Recreation Survey: A recreation survey was conducted by telephone during the spring of 1974. The questionnaire included questions recommended by the local park and recreation board as well as those submitted by the State. The general area of concern consisted of six counties--Dawson, Richland, Wibaux, Prairie, McCone and Garfield-with special emphasis on Makoshika State Park. Analysis of the 268 returns is provided below.

Most people in the area visit nearby recreation resources and Makoshika is the outstanding favorite, with Intake Dam and Fort Peck running second and third. The Yellowstone River area was listed frequently and was the fourth favorite area. However, a great variety of places was listed by the respondents as places of visitation, considerably more than were suggested in the questionnaire.

More than half of the respondents, apparently, do not try to visit all areas in the region but many commented they might attempt this if roads and access to these areas were improved.

Respondents were queried as to the average number of visits per summer season to their favorite areas. Most people visited Makoshika, with an average of 8 visits per party; Intake Dam was next with an average of 7 visits per party. While not nearly as many visited Yellowstone River areas, which was indicated as third, those who did averaged 10 visits per summer.

The primary reason given by Glendive area people for venturing out to recreation areas was rest and relaxation with fishing as a second major reason, and third, simply enjoying the general outdoor environment. Camping was in fourth place as a significant reason for going to a recreation area.

While the majority of those questioned were satisfied with the areas in general, there were a number of instances of dissatisfaction. Listed were such problems as the roads, litter, limited sanitary facilities and the lack of shade--all at Makoshika. The crowded conditions at Intake were frequently listed. The question generating this information was incorrectly answered in many instances and it is difficult to draw general conclusions that would apply to all areas.

Most respondents stated that reasonable family expectations were satisfied in the recreation area. They were further questioned to determine if all age groups were satisfied and in this instance the

responses showed that the facilities for children's needs were considered to be lacking. Respondents indicated that playgrounds, swimming areas, wading pools and ball fields would be desirable for the younger generation with playgrounds being most frequently mentioned. The responses included one request for facilities for the middle-aged man or woman.

Park and recreation agencies are showing more concern than previously for the problems of the disabled at recreation areas, and accordingly, Glendive people were asked what problems they felt the handicapped encountered. Most people did not respond to this question; however, those who did provided excellent suggestions stating that better accessibility is a need and suggested improved roads, better trails and walks, and steps only in appropriate areas. The respondents indicated that restrooms are generally not properly designed for the disabled.

Participants were asked to comment on the issue of recreational vehicles in the Park. Most frequently listed were needs for added spaces for campers, with places for boating second highest in need. Owners of snowmobiles and motorbikes indicated need for more trails; however, roads for cars, pickups and campers were also indicated as being needed.

Recreation planners surmise that one reason for limited use of a given area might be a lack of adequate public information. While most of the people indicated there was adequate information, a number felt there should be more information. This need was reiterated in other parts of the responses and included suggestions for a map of the highlights of Makoshika Park, a map of the small dams in the region and more information on various activities which are available.

From the viewpoint of recreationists, the major problems for the multi-county region (State Planning Region No. 2) were bad roads, lack of drinking water, the need for more fishing, swimming and boating facilities, and too much garbage and litter. Suggestions were also made to build the Clear Creek project, construct a dam at Sand Creek and also suggested was a lake at Makoshika. Other items which are important to the recreationist include Park upkeep, the user apparently feeling that recreational areas are not in the best condition with matters of dust and litter, and lack of enough caretakers. Facilities that were needed were listed as trails,

tables and boat launching areas and more signs. Publicity for the Park and recreation area should be improved, reinforcing the earlier stated need for more information on park and recreation resources. There was feeling that there is not a proportionate share of recreation money invested in facilities in eastern Montana as compared to western Montana. For the above items, which treated the planning region as a whole, half of the respondents were women and half were men.

Makoshika State Park Summary - The remainder of the questionnaire addressed Makoshika State Park specifically. For that portion, respondents indicated they visited the Park at an average of 6 times per person. From the visitor standpoint, the primary attractions at Makoshika are picnicking first; scenic views, second; rest and relaxation, third; with pleasure driving taking fourth place. Recreationists were asked what conditions might limit the use of Makoshika and these were indicated as roads, first; the lack of water, second; and weather conditions as third. Practically all respondents, however, indicated that they were generally satisfied with Makoshika despite their recommendations for improvements.

Due to considerable local discussion on expansion of the overall Makoshika Park area, respondents were asked if they favored enlarging the park and somewhat more than half were against expansion in size. Since the boundaries at Makoshika are not easily visible or determined, it is not clear if all of the respondents fully understood the present park extent. Makoshika at that time consisted of 160 acres of land which was owned and 624 acres of land which was leased; and people were asked if they favored expansion of park size over this amount.

Somewhat over half of the respondents were opposed to closing the Park from October through March. Opinion was evenly divided on a three-day camping limit.

Users were asked how they felt about limiting camper-trailers to the lower elevations and limiting the areas of high elevation to the use of tents or perhaps single vehicles. The majority of the respondents felt that the camper-trailers should be kept away from the higher elevations but this would not necessarily preclude a pickup camper which could negotiate the steep winding road successfully without hazard to other drivers. About half of the respondents were in favor of limiting the upper area to tents and

half were against this. Due to difficulties of interpretation of answers, the results are not conclusive from this particular question.

A slight majority would like to see a museum for display of fossils and artifacts in the Park but an almost equal number wished to have it constructed in Glendive or not at all. A visiting geologist called attention to a field display in the Badlands National Monument that she felt had not proved successful and recommended instead a building close to Glendive.

Visitors were asked if they thought additional development of a variety of facilities was desirable and nearly all favored development of all those items listed. Most frequently recommended were additional drinking water wells, roads, signs and sanitary facilities. About half of the respondents favored development of Sand Creek at Makoshika, but quite a number felt it was too costly. Quite a few were unfamiliar with the area. By far, the majority favored a loop road connecting Makoshika Park with adjacent lands and points of interest. Most people objected to hunting in the park; however, they did not feel that grazing hindered their use of the area. Summarizing the problems specifically at Makoshika, Glendive people feel that they are roads, lack of water, littering and lack of adequate law enforcement and the lack of signs showing location of trails, water and points of interest. The survey questionnaire and tabulations are reproduced in Appendix F.

2. Public Meetings: Meetings were held both before and after conducting the recreation survey with the Dawson County Commissioners, Glendive Chamber of Commerce Park Committee and the City-County Recreation Committee to identify and prioritize management and development plans. These public meetings, culminating on September 19, 1974, prioritized the following preferences:

a. Immediate

(1) patch and oil the entrance road
(2) improve orientation and directional signing
(3) identify Park area and acquire management control of Federal, State and County inholdings.

b. Short range

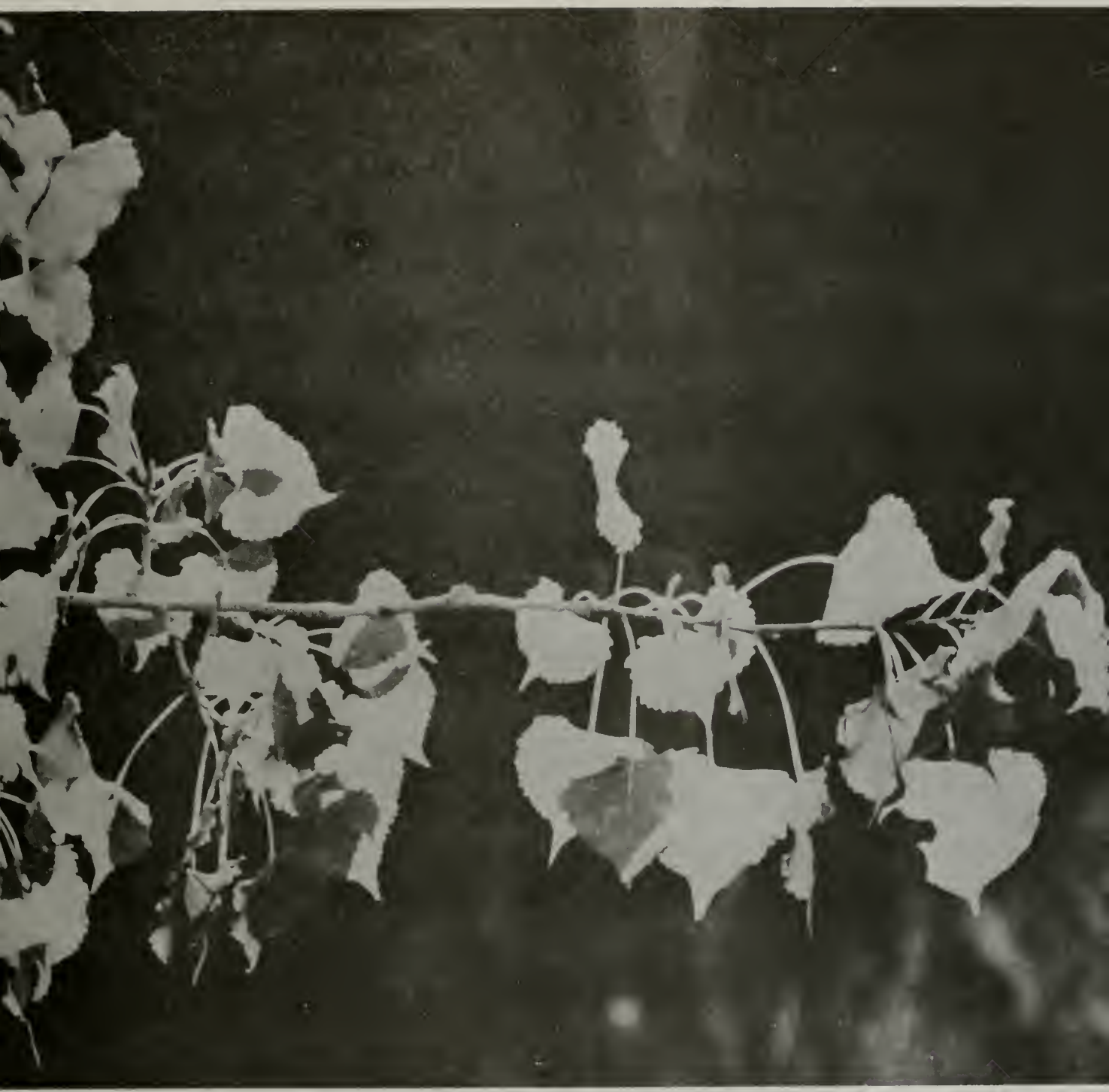
(1) acquire management control of private inholdings within the Park area.
(2) improve and better maintain roads.
(3) develop at least 3 drinking water sources.

c. Long range -

* develop areas for motorcycling, cross-country skiing and possibly downhill skiing
* encourage recreational uses of Park
* allow development of an organizational camp (i.e. Lions' Youth Camp improvements).
* develop a scenic loop drive up Sand Creek
* allow low-density primitive camping
* expand Park boundaries - consider Yellowstone river bottom as well as badlands.
* consider Sand Creek for Park development
* encourage wildlife
* develop museum and/or outside fossil displays
* carefully control motorcycling, hunting, snowmobiles and fossil collecting
* limit fencing within Park
* limit number of camping days and areas
* consider closing Park road in winter - safety, vandalism
* consider existing grazing rights - possibly allow winter grazing only
* develop hiking and horseback riding trails and possibly a horse concession.

In general, the survey and meetings found that management control and Park facility maintenance and development were the main concerns expressed by those most familiar with Makoshika. Respondents expressed a desire not only to bring all of the existing Park facilities within the ownership and management of the State Parks Division but also wished to see developments which would require Park expansion much beyond existing ownership boundaries.

For several years these preferences have been discussed and debated before being formulated into the goals, objectives and management directions described in Section III. The key issues are then addressed within the framework of resource management, fish and wildlife management, and visitor use.



Plains Cottonwood in Cains Coulee.

Mule Deer near Eyeful Vista.

SECTION III
MANAGMENT GOALS AND DIRECTION

A. MANAGEMENT GOAL

Makoshika State Park will be managed to preserve, protect and enhance its significant scenic, geological, ecological, cultural and scientific values in order to provide opportunities for appropriate types of public recreation use and enjoyment.

B. MANAGEMENT OBJECTIVES AND CONSTRAINTS

1. Resource Management and Use:

a. Landscape management - The landscape will be managed with the goal of preserving and highlighting the natural resources of the Makoshika badlands and Yellowstone River riparian ecosystems, including flora and fauna. Landscape modification will be allowed where and when necessary to provide for appropriate types of recreational use and enjoyment.

b. Land adjustments - The State will seek management control by acquisition or exchange inholdings and adjacent land needed to provide for effective management, visitor use and the preservation or protection of Park values. Land desirable to further Park goals will be identified by a master plan.

c. Surplus property -- Portions of any purchased property which are excess to Park needs shall, after careful analysis, be disposed of by exchange for other lands or by sale.

d. Water rights -- All rights to the use of water on the property shall be perfected by the State. Private water rights will be acquired insofar as practicable, however, adjacent landowners will be permitted to use water at appropriate rates when such use facilitates park management.

e. Mineral exploration and development -- Except where permitted by law, exploration, mining, extraction of minerals, removal of soil, sand and gravel, and rock will not be allowed.

f. Solid waste disposal -- Wastes generated within the Park may be disposed of within or outside of

the property lawfully and only when disposal does not pollute air or water or impair important resources.

g. Livestock grazing -- Livestock grazing shall be allowed within the Park only in areas where it does not detract from visitor appreciation of park values and/or the enhancement of wildlife habitat. Any such grazing shall be in conformance with good land management practices.

2. Fish and Wildlife Management:

a. Developments -- Developments to protect or enhance fish and wildlife resources will be encouraged where not inconsistent with landscape management.

b. Fish ponds -- The State will seek to acquire and/or develop existing ponds or areas suitable for ponds within the Park which show potential for stocking game fish.

c. Wildlife habitat -- Vegetation and wildlife will be managed to produce optimum habitat for big game, small game, and non-game wildlife where not inconsistent with landscape management.

d. Wildlife species -- Special consideration will be given to encouraging an abundance of native wildlife, both in species and in numbers, for the enjoyment of the public.

e. Hunting and fishing -- Public hunting and fishing will be allowed only when and where compatible with management goals.

3. Visitor Use and Facility Development:

a. Master plan -- A master development plan will be prepared to cover resource management, fish and wildlife management, visitor use, and facility development. All permanent developments will be in accordance with the Master Development Plan.

b. Interpretive facilities -- The Park's paleontological, geological, and ecological values should be interpreted to the visitor with sensitivity and appreciation for their unique elements. A visitor center/museum should be the first place of contact and therefore located near the Park entrance.

c. Recreational activities - Appropriate recreational uses which facilitate visitor appreciation of

scenic, scientific and recreational values and enjoyment of the park's primary resources will be encouraged and provided for. Day use and camping facilities will be designed and located to take maximum advantage of the recreation and interpretive value of these resources.

d. Commercial activities - Concession facilities will be encouraged to provide basic visitor services as well as visitor appreciation and appropriate use of the Park. Except where permitted by law other commercial activities will not be allowed.

e. Roads - Roads will be located and developed to take maximum advantage of interpretive and scenic values. Spur roads will be provided to trailheads and selected points where a variety of Park values can be observed and interpreted.

f. Trails - Nature trails, foot trails and horseback trails and trailhead facilities for visitors will be developed to provide access to a representative sample of the badlands and riparian ecosystems.

g. Motor vehicles - Motor vehicles, except for management purposes, will not be allowed off roads or on service roads except in areas or on trails specifically developed and reserved for such use.

C. FUTURE MANAGEMENT DIRECTION

1. Resource Management and Use:

a. Landscape management

1) Significant resources - A map overlay in this plan shows important resource features such as the scenic badlands area within which are areas of tablelands, dramatically dissected badlands, less severe badlands, open rolling grasslands and intermittent hardwood and coniferous woodlands. Also shown are significant water features and associated bottomlands. A list of prominent landmarks is shown in Figure 10. A map of significant resources is shown in Figure 11. This list and map will be updated as additional information becomes available.

Figure 10 Makoshika Landmarks

Photo* No.	Date	Name	Location	Name by
1.	5/26/82	Tyrannosaurus Peak (Witch's Hat)	South of Caretaker House	R. W. Hiatt
2.	5/26/82	Twin Buttes	North of Rifle Range	R. W. Hiatt
3.	5/26/82	Mrs. Butterworth	Spire on left below switchbacks	Hjorids Hendrickson
4.	5/26/82	Razorback Ridge	On left at bottom of switchbacks	
5.	5/26/82	Cap Rock	On Cap Rock Trail	?
6.	5/26/82	The Elves	On Cap Rock Trail	?
7.	5/26/82	Natural Bridge	On Cap Rock Trail	?
8.	3/4/81	Radio Hill	Hill west of road at radio towers	R. W. Hiatt
9.	3/4/81	Tower Hill	Hill east of road at radio towers	D. C. Conklin
10.	5/26/82	The Camel	Below Tower Hill	R. W. Hiatt
11.	5/26/82	The Elephant	Below Tower Hill	?
12.	5/26/82	Pine-on-Rocks Vista		?
13.	5/26/82	Eyeful Vista		?
14.	5/26/82	R. W. Hiatt Amphitheatre		D. G. Conklin
15.	5/26/82	The Goblins	At Amphitheatre	D. G. Conklin
16.	None Yet	Cains Coulee Overlook	Beyond Amphitheatre	D. G. Conklin
17.	None Yet	George Washington	South of KXGN Tower	R. W. Hiatt
18.	5/26/82	Baked Potato (Big Potato)	South of KXGN Tower	R. W. Hiatt
19.	5/26/82	Moby Dick	South of KXGN Tower	R. W. Hiatt
20.	5/26/82	Badlands Butte	On Road to Lions Camp	D. G. Conklin
21.	5/26/82	Buzzard Ridge	On Road to Lions Camp	D. G. Conklin
22.	5/26/82	Scoria Butte	On Road to Lions Camp	R. W. Hiatt
23.	5/26/82	Artists Vista		?
24.	5/26/82	Ducks on Rock	On Road to Sand Creek Overlook	Cliff Harsh
25.	5/26/82	Sand Creek Overlook		?
26.	7/64	The Three Sqaws	?	Harvey Graber
27.	1964	The Grotto	?	Foster
28.	1900's	Fallen Bridge (Natural Bridge)	?	A. S. Foss
29.	7/25/16	Custers Pillar	?	J. H. Miskimen
30.	7/25/16	Balancing Rock	?	J. H. Miskimen
31.	1900's	Sitting Bull's Tower	?	J. H. Miskimen
32.	1900's	Icicle Peak	?	J. H. Miskimen

* A photo record of each landmark is maintained in Parks Division Files for positive identification and monitoring.

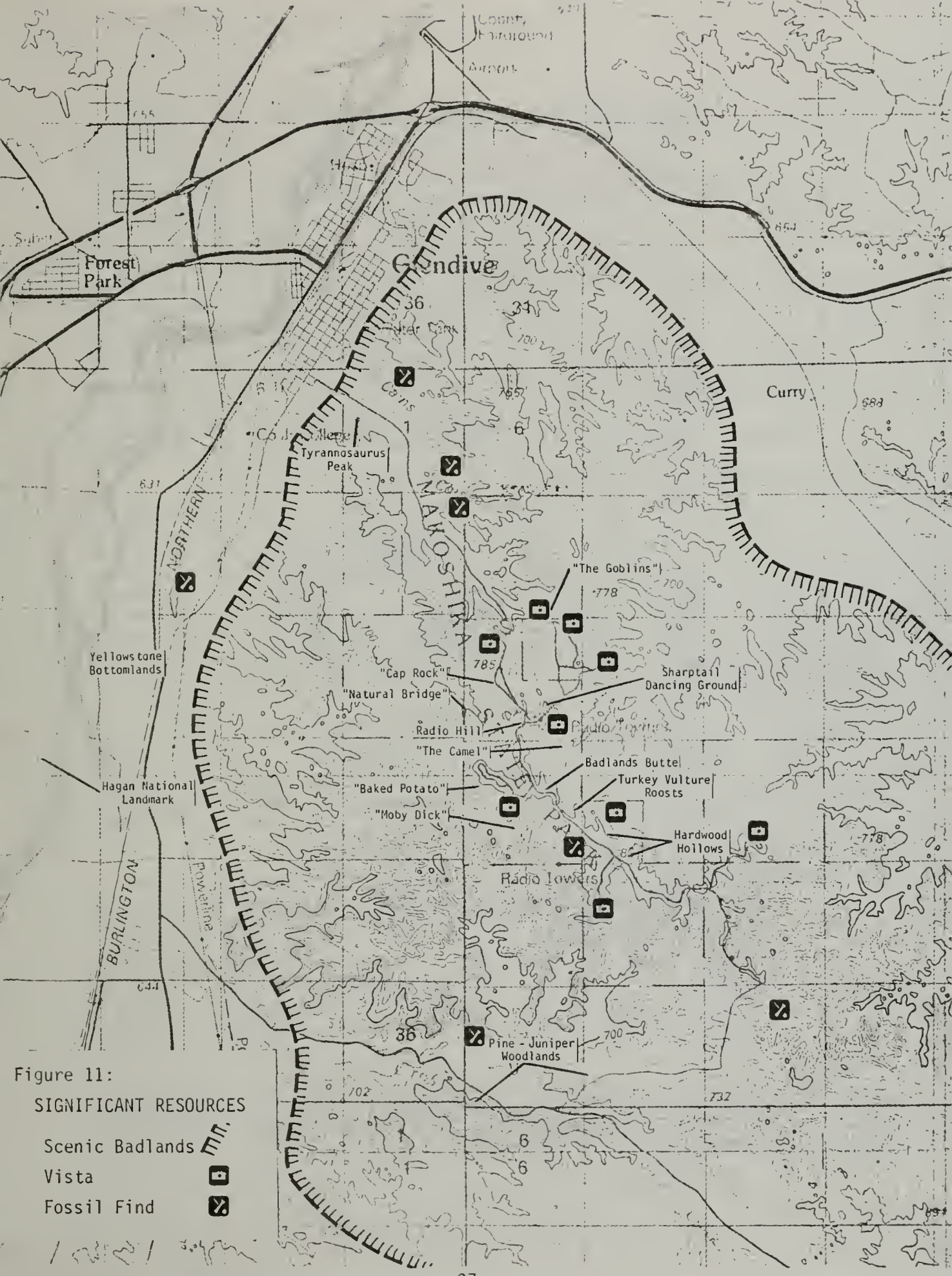


Figure 11:

SIGNIFICANT RESOURCES

Scenic Badlands

Vista

Fossil Find

2) Facility locations - all future facility construction or relocation will be done with the intent of centralizing services and maximizing scenic and recreational opportunities while minimizing landscape disturbance and safety hazards. Archaeological and paleontological resource inventories will be conducted prior to any surface disturbance activities and all finds will be evaluated for their interpretive potential as well. The Montana State Historic Preservation Officer (SHPO) will be consulted regarding the eligibility of any inventoried sites for nomination to the National Register, and both the cultural resource and SHPO comment will be taken into account in the design of any roads, facilities or disturbances as per the National Historic Preservation Act of 1966, as amended, and 36 CFR 800.

3) Communication sites - relocation and consolidation of these sites, consisting of 14 towers, reflectors and associated buildings, will be given a high priority in order to restore scenic views. A relocation plan will be developed in cooperation with facility owners which will specify which towers can be relocated outside of the proposed park administrative area and which, because of technical reasons, should be combined into an expanded facility at one site within the park. An inventory of communication facilities is reproduced in Appendix G. Nine of these facilities are wholly or partially located on BLM land which is being patented to the State for Park purposes. These valid existing rights of way will be honored and the holders will make all future rental payments to the State.

b. Land Adjustments - The current landownership map in this plan identifies landowners within and adjacent to the planning area. The State will seek to manage and provide for park and recreation use only on public lands within this area. Donation, sale, exchange, lease, or cooperative agreement with the affected landowners will be pursued as necessary. Current landownership status and management priority is shown in Figures 12 and 13.

c. Surplus property - Ownership of lands and rights will be continually evaluated with regard to optimizing recreation potential. Lands and rights no longer required will be disposed of.

d. Water rights

Figure 12. Planning Area Land Ownership Status

Priority	Ownership	Acreage	Current Status
	Montana Department of Fish, Wildlife and Parks	2890	Surface Ownership Only
1	Bureau of Land Management, U.S.D.I.	624	R & PP Patent Application
2	Montana Department of State Lands	1,280	School Trust
3	Dawson County	4,449	10 year Recreation lease
4	Bureau of Land Management, U.S.D.I.	3,920	Public Domain
5	Interior Lands (public land on 3 or more sides)	1,680	Private-160 acres leased
6	Adjacent lands near Sand Creek	2,480	Private
	Total Public	13,163	
	Total Private	4,160	
	Grand Total	17,323	

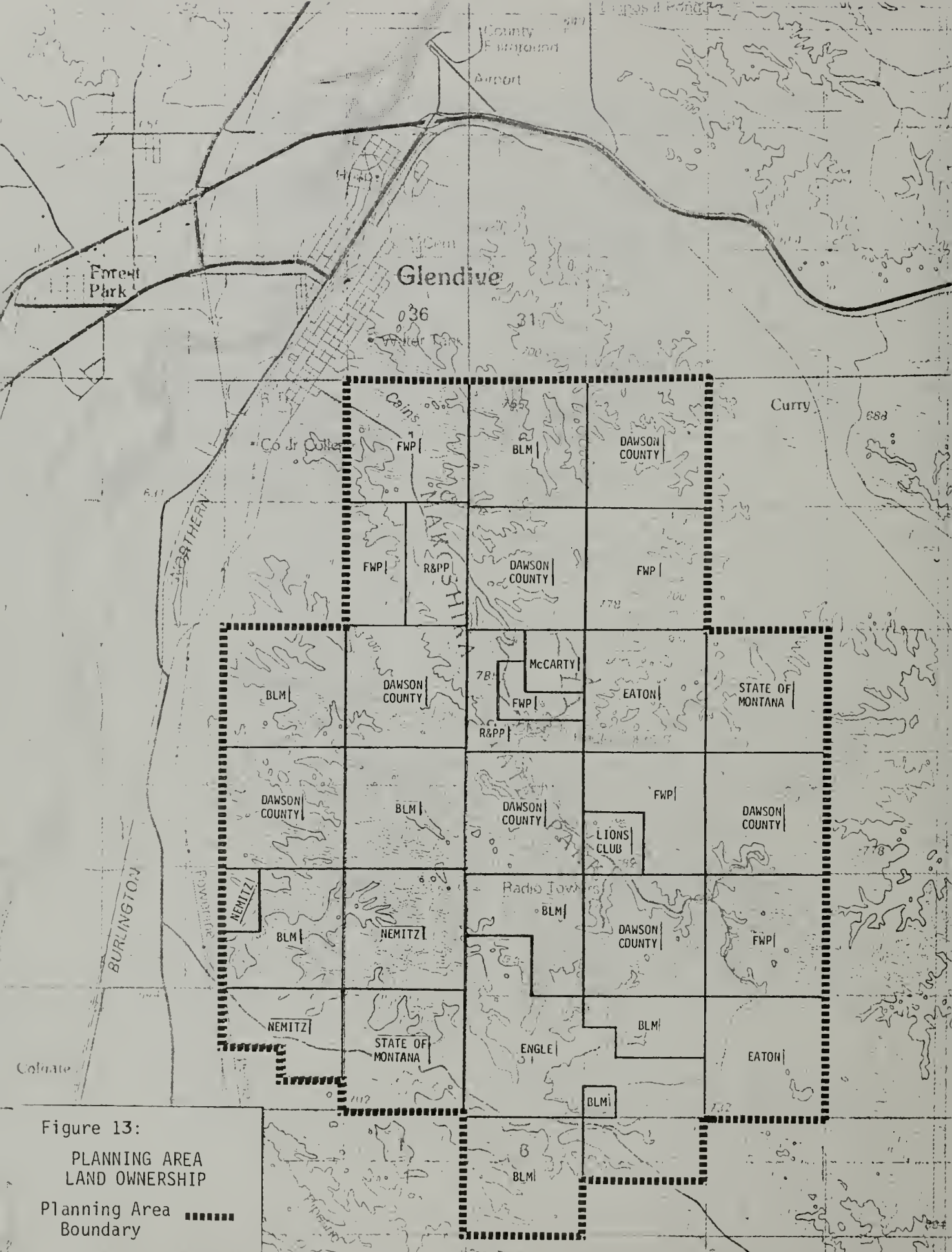


Figure 13:

PLANNING AREA
LAND OWNERSHIP

Planning Area Boundary

1) Existing wells - a water right will be filed on the wells at the Park Manager's residence and the lower picnic area.

2) New acquisitions - Water rights will be acquired with property acquired whenever possible.

e. Mineral exploration and development

1) Mineral rights - The State will seek to acquire or exchange private mineral rights within the planning area for public mineral rights elsewhere whenever possible during land adjustments. Presently, private mineral ownership exists under 810 acres and federal mineral ownership exists under 2,080 acres of State-owned Park surface. Figure 14 shows Federal mineral ownership.

2) Mineral leases and patents - The current policy of oil and gas leasing within the planning area will be continued where it does not damage recreation resource values. However, public domain lands within the area must be protected from strip-mining and locatable mineral occupancy and an evaluation made of the mineral withdrawal options available under Title 43 CFR 2440.4.

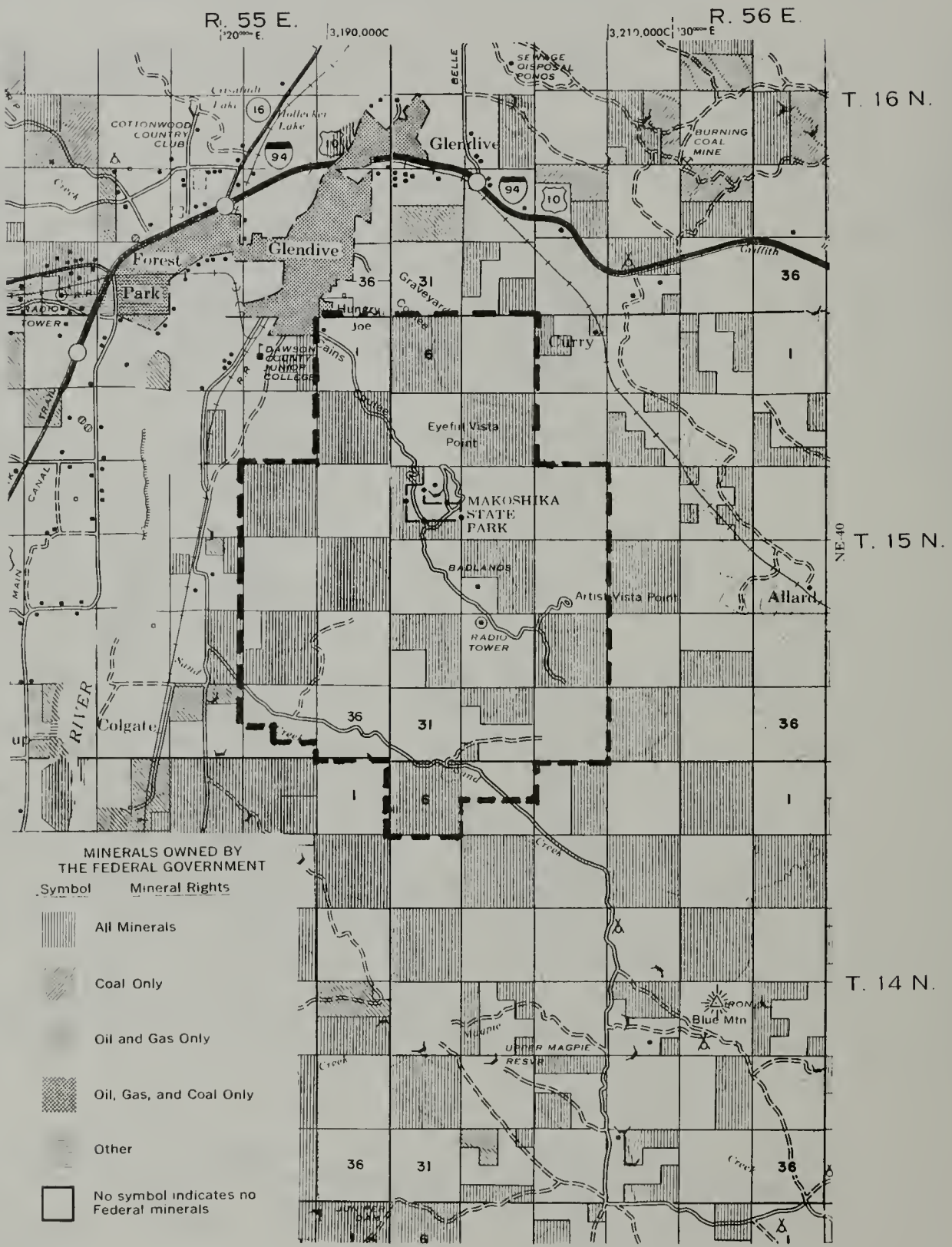
3) Oil and gas policy - An areawide oil and gas policy will be developed in cooperation with the Bureau of Land Management and other mineral owners which will specify which areas should have general or special lease stipulations, no surface disturbance stipulations, or a no lease option. Exploration and development permits and requirements will be standarized and centralized as much as possible. All valid oil and gas leases will be honored and activities closely monitored.

f. Solid waste - all wastes generated within the park will be disposed of in the Glendive sanitary landfill.

g. Livestock grazing

1) Grazing capacity - A cooperative study ill be made with the Bureau of Land Management to determine the forage availability and grazing capacity of lands within the planning area.

Figure 14. Federal Mineral Ownership



2) Grazing plan - A cooperative grazing plan will be developed with the Bureau of Land Management and livestock grazers to establish a cooperative grazing unit with seasons, water developments, fencing and grazing capacity suitable for livestock use which will not be detrimental to other Park values.

2. Fish and Wildlife Management:

a. Developments - Developments will be evaluated in conjunction with the grazing plan and on a case-by-case basis as needed. Fencing needs for livestock and wildlife species of special interest will be similarly evaluated.

b. Fish ponds - Fish ponds and fishing access will be a high priority and fishing license funding will be requested for acquisition and development of feasible sites.

c. Wildlife habitat - Recognition of wildlife needs will be provided in the grazing plan and grazing capacity allocated appropriately.

d. Wildlife species of special interest

1) Raptors - Special consideration will be given to protecting and enhancing the migrant population of turkey vultures and other raptor inhabitants of the Park and interpreting them to the public. A baseline study will be initiated on the vulture population.

2) Merriam's wild turkey - Although not a local native, this bird is one of the most popular game birds in the State for viewing and hunting. Special consideration will be given to establishing and encouraging a resident population.

3) Extirpated species - Three animal species once found within the Park area have been totally eradicated in years past. These are the plains bison (1880's), the Audubon bighorn (1900's), and the wild horse (1950's). A study will be initiated to determine the merits of re-establishing one or more of these species within the Park in the future.

e. Hunting and Fishing

1) Hunting - hunting will be continued under existing State regulation except in developed areas or when

detrimental to wildlife species of special interest.

2) Fishing - Fishing will be allowed and encouraged under existing State regulation.

3. Visitor Use and Facility Development:

a. Master Development Plan - A key and map (Figures 15 and 16) and overlay in this plan shows thirty-three elements of the Long Range Master Development Plan. Also included are four master site plans for development plan items now under construction or being planned during the next biennium. Specific site plans will be added or updated as development funding is allocated.

b. Interpretive facilities - A Park interpretive plan will be prepared to suggest appropriate interpretive themes, locations and facilities.

c. Recreational activities

1) Recreation use - Recreational facilities will be developed as demand requires and funds are available in locations, amounts and kinds consistent with landscape management objectives. Current development priorities are drinking water, a campground, hiking trails and ORV trails.

2) Recreation development zones - The planning area has been divided into three recreation development zones as shown in Figure 17 to facilitate long range planning. The general development zone will include the Park's primary recreation developments, administrative sites and associated facilities. The dispersed recreation zone will include roads, trails, and dispersed recreation site developments. The primitive area zone will include non-motorized trail access and primitive campsites. Limited development within the latter two zones is necessary as they protect the bulk of the scenic views within the Park.

Figure 15. Master Development Plan

MAP KEY

NO.	EXISTING OR POTENTIAL DEVELOPMENT ITEM
(1)	Visitor Center, Museum & Park Manager's Residence (see master site plan)
(2)	Horse Riding Concession
(3)	Shooting Range (see master site plan)
(4)	Cains Coulee Group Use Area (see master site plan)
(5)	Picnic Area, Drinking Water (see master site plan)
(6)	Trailer Camp (see master site plan)
(7)	Snowmobile & Skier Parking Area & Trailhead
(8)	R. W. Hiatt Amphitheatre
(9)	Eyeful Vista Point & Interpretive Shelter
(10)	McCarty Tent Camp, Drinking Water
(11)	Picnic Area Spur Roads
(12)	Cap Rock Nature Trail & Interpretive Shelter (see master site plan)
(13)	Merriam's Wild Turkey Introduction
(14)	Smallmouth Bass Introduction - McCarty Pond
(15)	Picnic Area, Vista Point & Trailhead
(16)	Pine-on-Rocks Picnic Area & Trailhead
(17)	Backcountry Campsite
(18)	Bighorn Sheep introduction
(19)	Radio Hill Communications & Administrative site
(20)	Auto Nature Trail
(21)	Buzzard Ridge Interpretive Shelter
(22)	Lions' Club Youth Camp
(23)	Drinking Water Turnout
(24)	Makoshika Bowmen Archery Range
(25)	In-place Fossil Exhibit
(26)	Scoria Butte Ski Area
(27)	Artists Vista Point, Picnic Area & Trailhead
(28)	Vista Point
(29)	Sand Creek Primitive Camping Area, Drinking Water
(30)	Snowmobile & Skier Parking
(31)	Sand Cave Group Use Area
(32)	Sand Creek Off-Road Vehicle Park
(33)	Motorcycle Trail

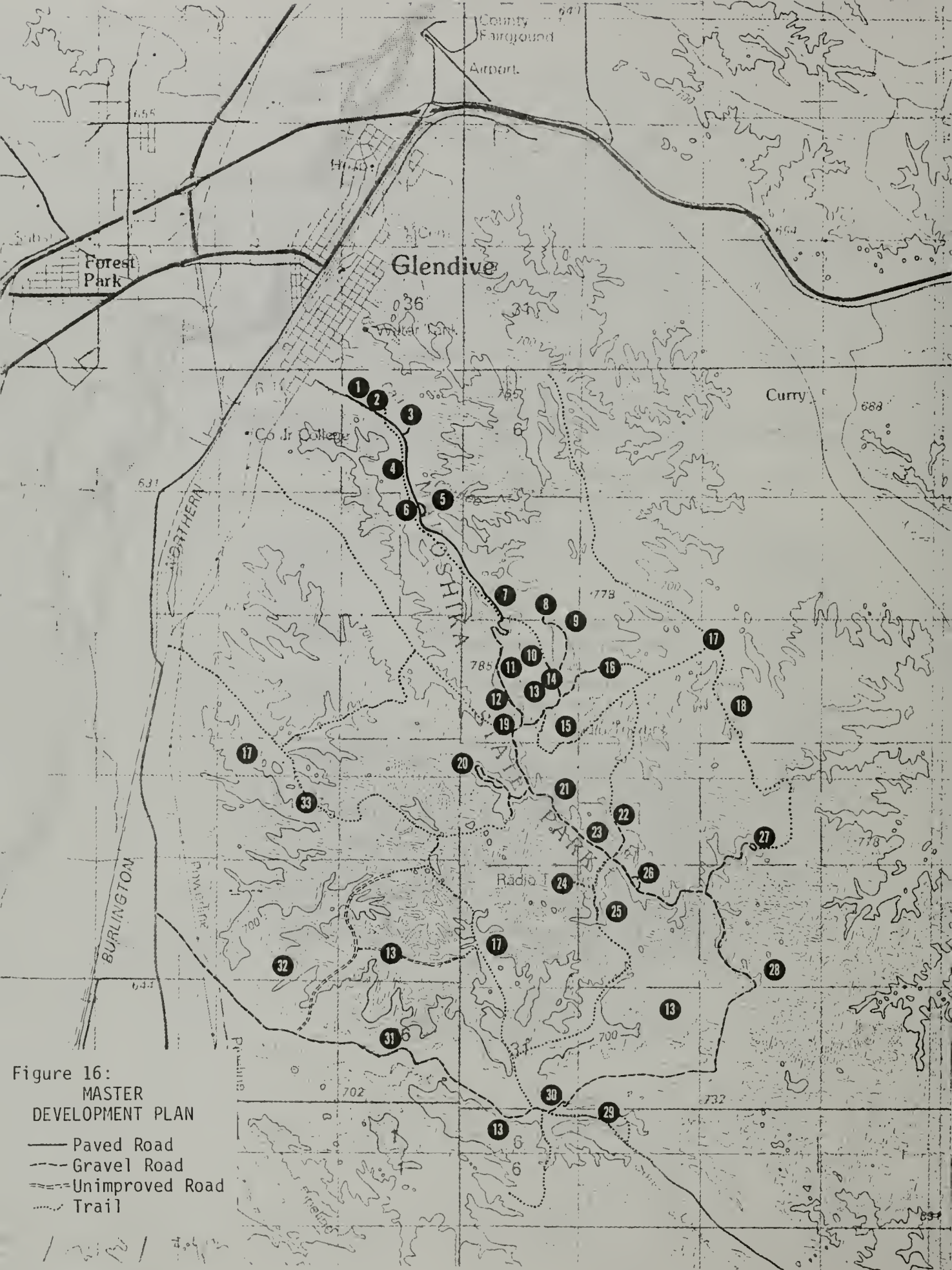
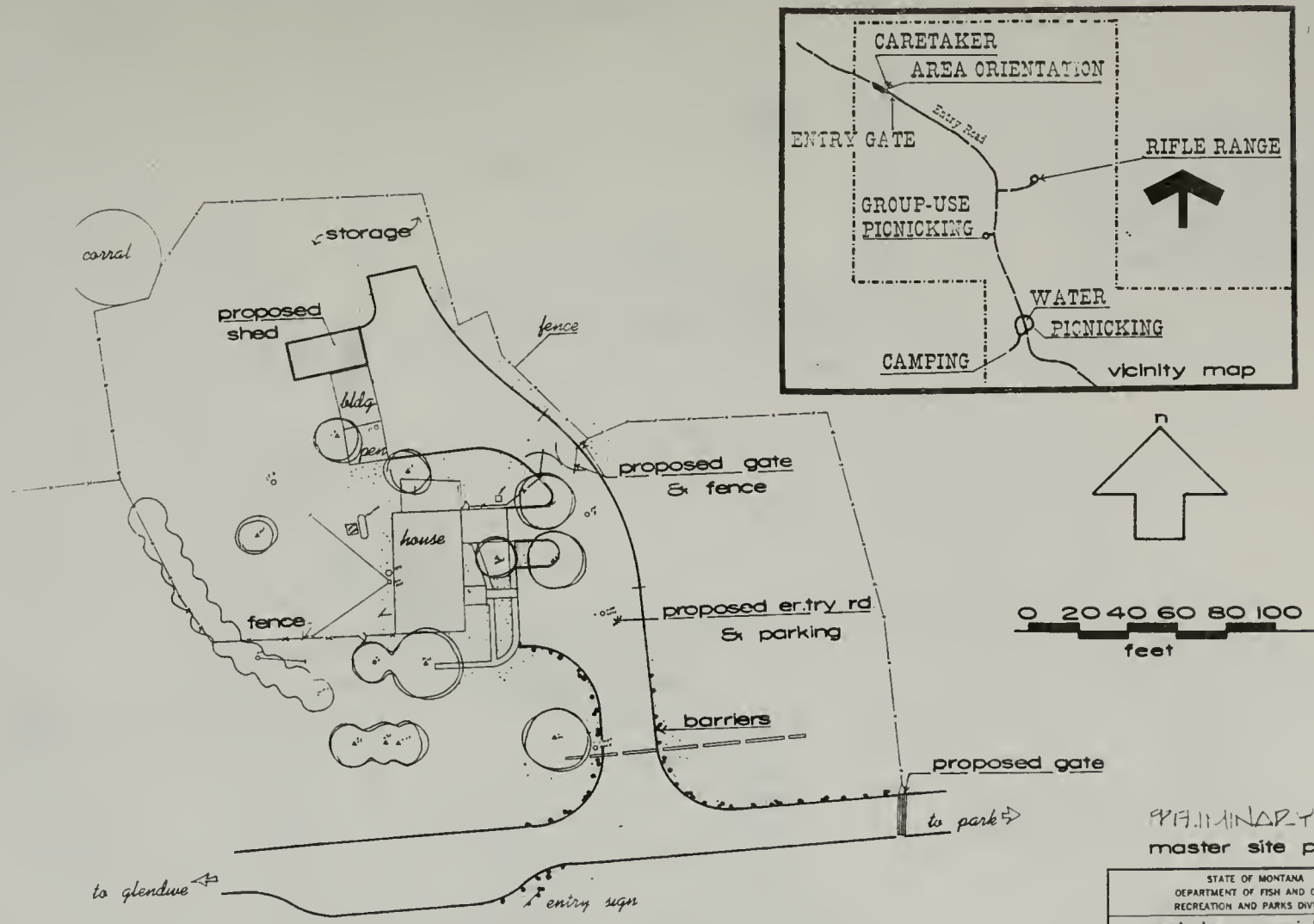


Figure 16:
MASTER
DEVELOPMENT PLAN

——— Paved Road
– – – – Gravel Road
=====Unimproved Road
·····Trail



note — seed all areas with native grasses
paint colors — chamois & russett (8515 & 8314

PRELIMINARY

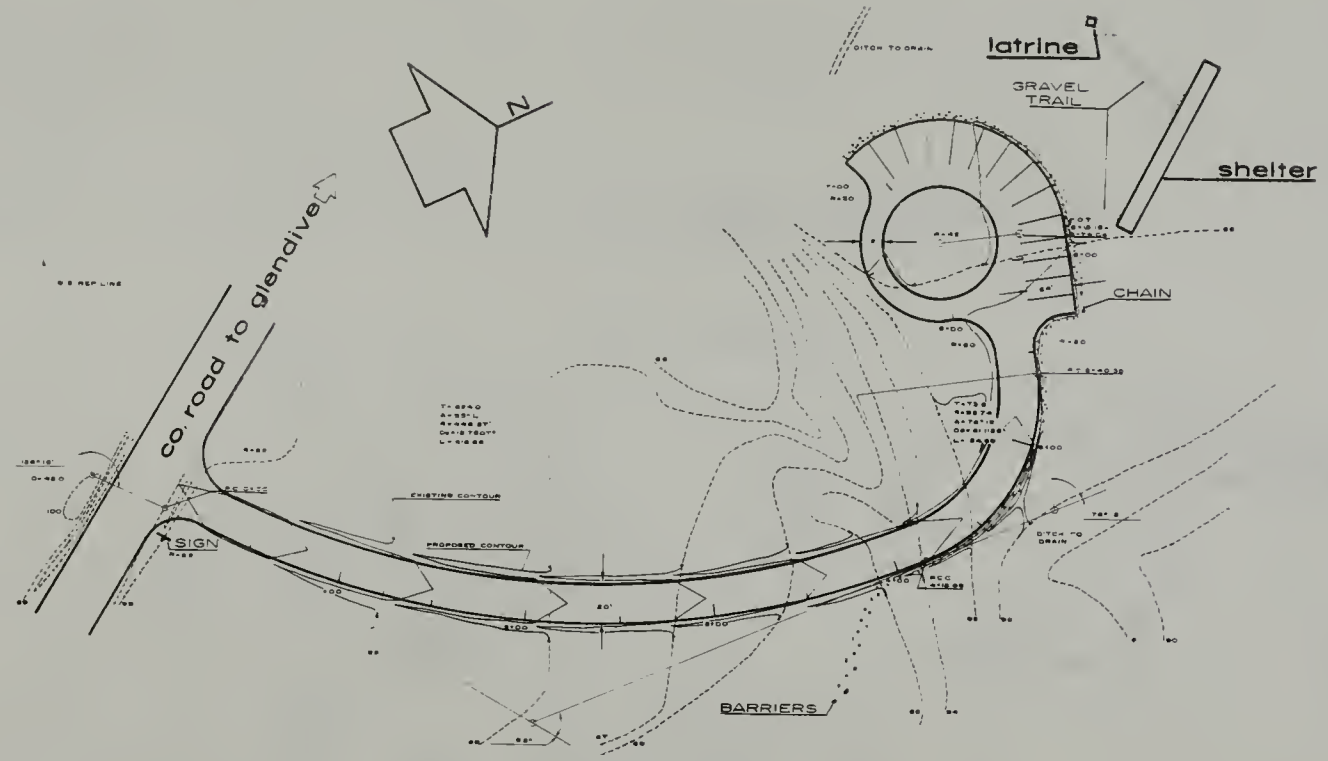
master site plan

STATE OF MONTANA
DEPARTMENT OF FISH AND GAME
RECREATION AND PARKS DIVISION

caretaker residence
makoshika state park
glendive, mont.

drawn: 11 '79

SHEET 1 OF 1



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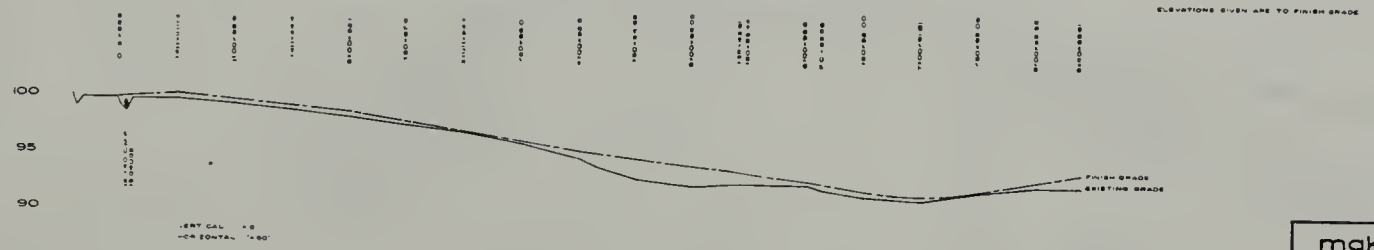

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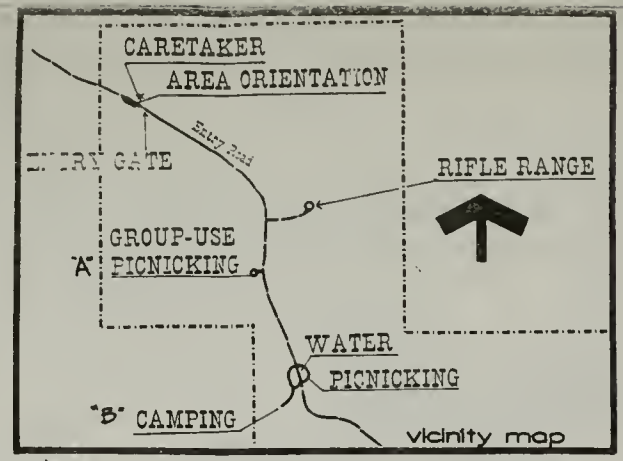

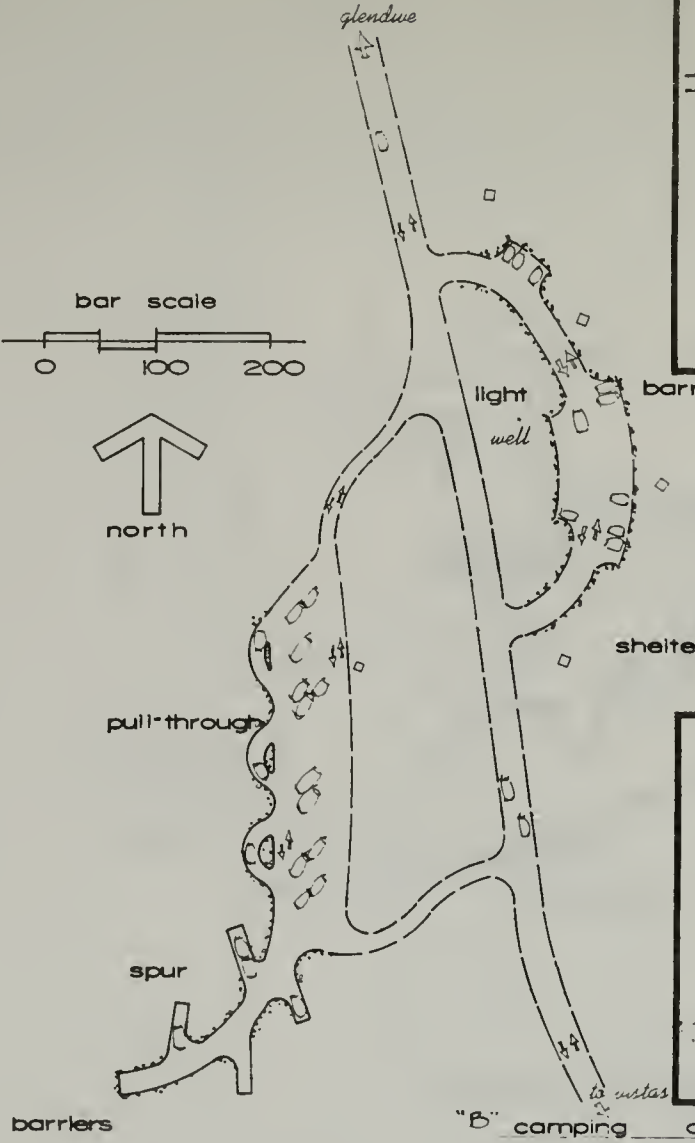

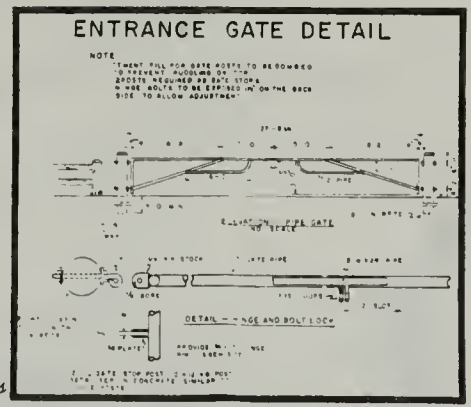

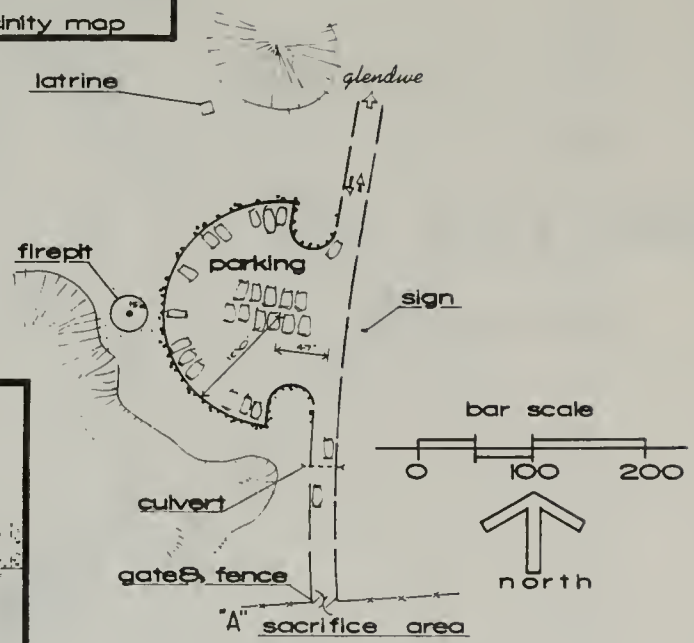

APPROVED BY DATE

APPROVED BY DATE

STATE OF MONTANA
FISH AND GAME COMMISSION
RECREATION AND PARKS DIVISION

makoshika state park
area details
glendive, montana

DRAWN BY R. MAYER DATE 11/79 SHEE
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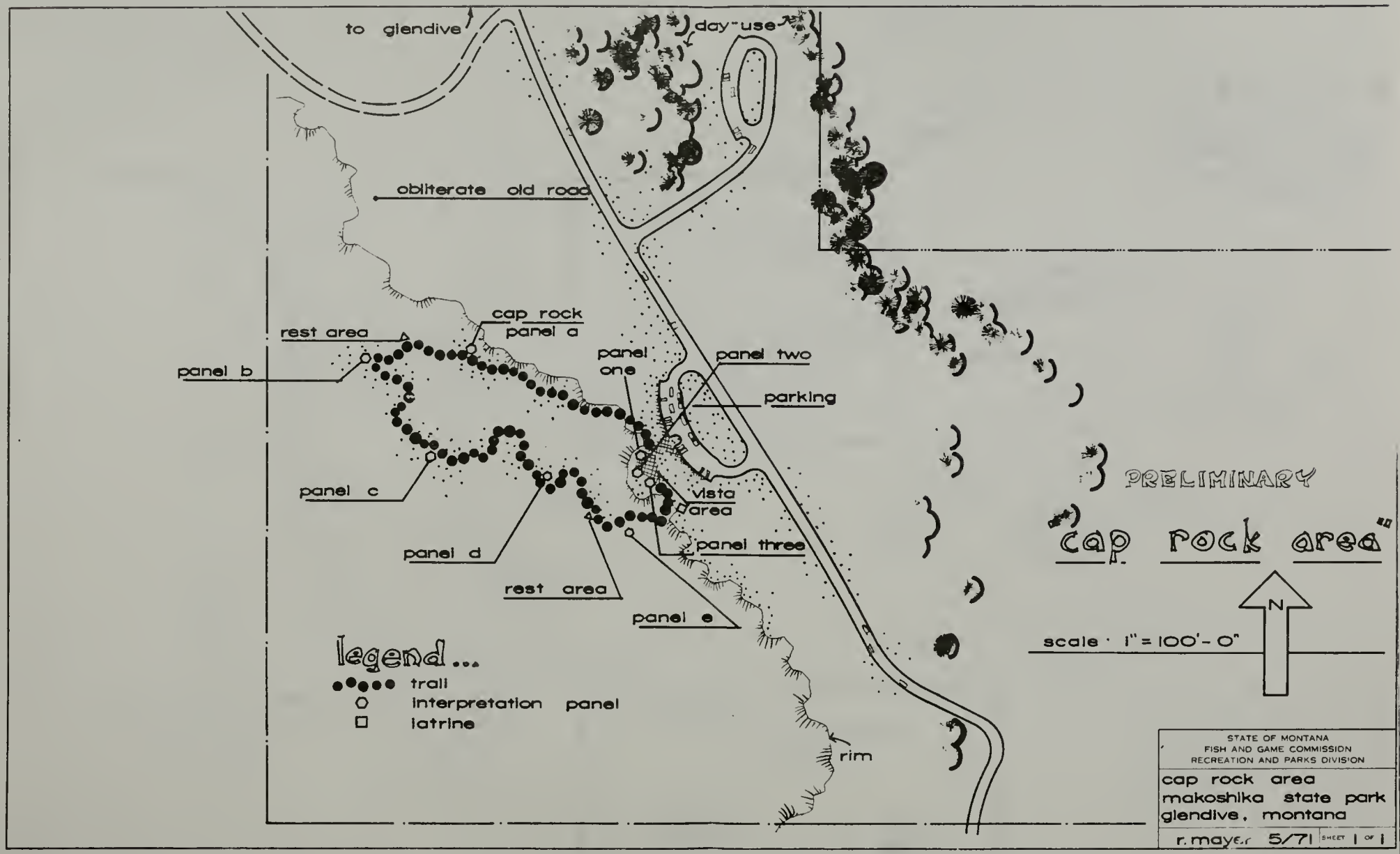
to glendive
day-use
obliterate old road
cap rock
panel a
rest area
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parking
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panel three
rest area
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rim
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STATE OF MONTANA
FISH AND GAME COMMISSION
RECREATION AND PARKS DIVISION
cap rock area
makoshika state park
glendive, montana
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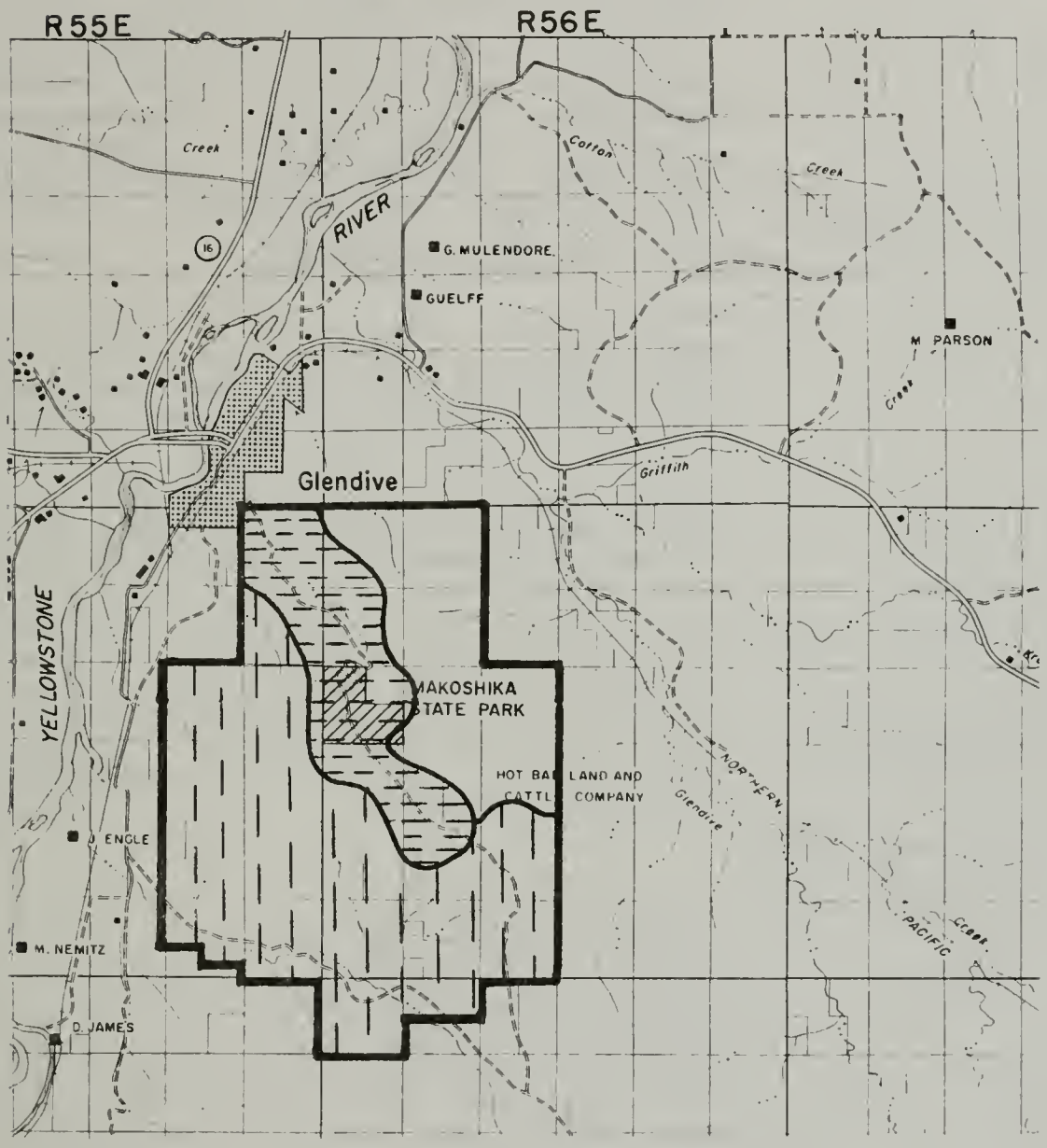
SHEET 1 OF 1

Figure 17. Recreation Development Zones



General Development Zone

Dispersed Recreation Zone

Primitive Area Zone

3) Public use regulations - As cooperative land management within the planning area is effected, the standard Administrative Rules of Montana State Park regulations will be enforced (see Appendix H.). Also, the State Antiquities Act will be enforced which prohibits destruction or removal of significant paleontological, archaeological or scientific resources without a permit.

d. Commercial and private facilities

1) Communication sites - Leases for communication facilities will be charged, where permitted by law, fees commensurate with administrative and maintenance costs or fair market value, whichever is higher.

2) Concessions - Concession contracts will be negotiated on a case-by-case basis and fees charged commensurate with cost or benefits.

3) Lions' Youth Camp - The State will assist, within legal and funding limits, in the perpetuation of an organizational camp and the development of facilities to serve the needs of youth, and public and private organizations as a non-discriminatory recreational retreat.

e. Roads

1) Classes - Three classes of roads will be developed and perpetuated within the Park. A two-lane paved road will be developed from Glendive to the top of the switchbacks. A gravelled and graded scenic loop road will continue through the Park and could continue down Sand Creek with several short gravel spur roads. Other spur roads will be graded but not gravelled.

2) Commercial use fee - No commercial traffic will be allowed on park roads without permission. A commercial use fee and permit system may be initiated in the future if use and road wear indicate a need.

f. Trails - Trails will be developed for hiking and horseback riding as land control allows.

g. Motor Vehicles

1) ORV's - All motorized vehicles will be restricted to existing roads except on designated trails and within the limits of an off-road vehicle park if one is established.

2) Motorcycles - Special trails will be developed and designated for motorcycle use as well as an off-road vehicle park.

3) Snowmobiles - When snow conditions permit, snowmobiles will be allowed on and off roads except in restricted areas. Parking areas and trails will be developed as well.

View near Pine-On-Rocks Vista.

"Baked Potato" on Valley View Loop Drive.

SECTION IV

ACTION PLAN

Fiscal Years 1985 - 1987

A. FUNDING SOURCES

Figure 18 shows current sources of funds available through legislative appropriation for the operation, maintenance, development, and acquisition of State Park System areas including Makoshika. The amount and allocation of these funds is determined biennially by the Montana State Legislature and Department and Division priorities.

In addition, management activities on Federal lands within the planning area which are not currently leased by the State, are budgeted for by the Federal Bureau of Land Management through funds provided by Congressional appropriation.

B. OPERATION AND MAINTENANCE

Routine maintenance activities emphasize providing as many solutions as possible for key management issues and immediate, short range and long range public preferences. This management direction will be continued at least through the next biennium.

A game warden resides at the Park entrance providing resource and facility protection and helps ensure visitor safety. Directional signs with mileages shown have been installed at all road intersections.

Interpretive brochures and trail and road guides have been printed to inform and educate the Park visitor about Park facilities and resources. Also to be installed are: a new entry sign, viewing stands for selected landmarks, a traveling museum display, and an outside fossil interpretive exhibit.

Other activities include: upgrading existing road maintenance and repair through an annual contract; upgrading and extending the Cap Rock and Kinney Coulee Trails; developing additional drinking water sources, mowing along roads and in picnic areas; and operating and maintaining a public shooting range by contract.

Recreation, day use, and camping fees are not currently charged within the Park. As camping and day use facilities are developed, reasonable fees may be charged in the future. Also rental fees will be periodically evaluated for existing communication

Figure 18. State Funding Sources

REVENUE SOURCES SUPPORTING STATE PARKS

C = Revenue sources that are used for capital investment
O & M = Revenue sources that are used for operation and maintenance

TITLE	SOURCE
C,O&M - Coal Severance Tax	A portion of the tax on coal extraction is distributed by formula to the state parks program. Use of this money is limited to acquisition of and improvements at state parks, and operation of sites acquired with coal tax funds.
C,O&M - Federal & Private Revenue	This money usually comes from federal cost sharing of various projects, but also includes earnings and donations from private sources.
C,O&M - Fish & Game Earned Revenue	The state park system receives appropriations from revenues collected from the sale of sportsmen's licenses. This money is used to acquire, develop and care for sites which directly benefit sportsmen.
O&M - General Fund	State general tax revenue derived from individual and corporate income and property taxes and from interest derived from investments. This money may be used in support of any legitimate park activity.
C - Long-Range Building Fund	A fund which receives revenues from the state cigarette tax and the interest it accrues.
C,O&M - Motorboat Fuel Tax	A portion of Montana's gasoline distributors' tax is specifically set aside for the acquisition, development and maintenance of state recreation sites where motorboating takes place.
O&M - Parks Earned Revenue	The state park system earns revenue from entrance fees collected at Lewis & Clark Caverns, overnight and seasonal camping fees, cabin site rentals, concessionaire agreements and other incidental activities taking place upon park system lands. This money may be used in support of any legitimate park activity.
C,O&M - Snowmobile Fuel Tax	A portion of Montana's gasoline distributors' tax is set aside for the development and maintenance of snowmobile recreation facilities and law enforcement.
C,O&M - Snowmobile Registration Revenues	Resident snowmobile owners are required to register their machines and to purchase a "tax paid decal." Unregistered non-resident snowmobilers must display a temporary permit. This money is used for development and maintenance of snowmobile facilities as well as law enforcement.

sites. Any future concessions will also be charged reasonable fees. All revenues collected will be deposited in the State Parks earmarked account and used to supplement funding for the Park operation and maintenance activities and facility development described by this action plan.

Operation and maintenance will be funded as Department and Division priorities dictate. General Fund and coal tax revenues will be the primary sources of funds. Current estimates of future personnel and funding levels are as follows:

Fiscal Year beginning July 1, 1984

1. Personnel (in annual Full Time Equivalents)

Park Manager IV	.25 FTE
Park Manager I	.25 FTE
Game Warden	.25 FTE
Caretaker	.53 FTE
Maintenance worker	.10 FTE
	1.38

2. Budget (by project number)

Parks (6704) -	$ 30,000
Enforcement (4704) -	9,000
	$ 27,000

Fiscal Year beginning July 1, 1985

1. Personnel

Park Manager IV	.25 FTE
Park Manager I	.25 FTE
Game Warden	.25 FTE
Caretaker	.53 FTE
Maintenance worker	.20 FTE
	1.48

2. Budget

Parks (6704) -	$ 32,000
Enforcement (4704) -	10,200
	$ 42,200

Fiscal Year beginning July 1, 1986

1. Personnel

Park Manager IV	.25 FTE
Park Manager I	.25 FTE
Game Warden	.25 FTE
Caretaker	.53 FTE
Maintenance worker	.20 FTE
	1.48

2. Budget

Parks (6704) -	$ 34,000
Enforcement (4704) -	10,200
	$ 44,200

C. ACQUISITION AND DEVELOPMENT

Emphasis through the next biennium, will be placed upon cooperative land use planning with the Bureau of Land Management, the Department of State Lands and Dawson County. Acquisition and development will proceed as planning is accomplished and as funding requests are approved by the State Legislature. Private donations will also be sought to augment funding.

These activities are specifically oriented towards achieving the goals and objectives set forth in this plan by solving the key management issues and providing for the public's management preferences. A proposed timetable for development is shown below. Costs and priorities may change but current estimates are as follows:

Fiscal Year beginning July 1, 1984

Pave switchbacks and entry road	144,787
Snowmobile parking lot	2,000
Move two communication sites	5,000
	$ 151,787

Fiscal Year beginning July 1, 1985

Continue acquisition of inholdings	$ 64,000
Develop consolidated communication site facilities	15,000
Snowmobile facilities	5,000
Interpretive panels	2,000
	$ 86,000

Fiscal Year beginning July 1, 1986

Continue acquisition of inholdings	$ 32,000
Pave remaining portion of lower road	80,000
Landscape administrative site	15,000
Develop Cains Coulee trailer camp	22,000
	$ 149,000

Sego Lily at Cains Coulee Overlook

"Moby Dick" and Sand Creek area.

SECTION V

APPENDIXES

A. Fossils Found in Makoshika

B. Land Capability Classification

C. Makoshika Wildflowers

D. Archaeological Report

E. BLM Land Use Recommendations

F. 1974 Recreation Survey Tabulation

G. Inventory of Communications Sites

H. Public Use Regulations

401/5

APPENDIX A

Fossils Found in Makoshika

Zoological Class Animal	Part of Animal	Frequency: 1 -- Many 2 - Some 3 - Rare or only one	Extant or Extinct: A - Type of animal lives today elsewhere B - Extinct
FISH:			
Ray	tooth	2	A
	vertebra	3	
Bowfin	tooth	2	A
	jaw fragment	2	
Sturgeon	scute	3	A
Gar	scale	1	A
	vertebra	2	
	tooth	3	
	skull fragment	2	
AMPHIBIANS (Aquatic Salamanders):			
Scapherpeton	vertebra	2	B
Lisserpeton	vertebra	3	B
Habrosaurus	vertebra	2	B
REPTILES:			
Turtles	vertebra	2	A
(10 species)	limb & toe bones	2	
	shell fragment	1	
	skull	3	
	jaw	3	
Champsosaurus	tooth	3	B
	jaw fragment	2	
	limb bone	3	
	vertebra	1	
Lizard (varanid)	vertebra	3	B
Crocodile	tooth	2	A
	scute	1	
	skull fragment	2	
	skull	3	
	jaw fragment	2	
	vertebra	1	
	limb & toe bones	2	
Alligator	tooth	2	A

(Note No. 1 When studying the array of animals, bear in mind the contrast of their environment with today's dramatically eroded badlands. From stratigraphic evidence, in all likelihood, this was a broad, low coastal floodplain similar to the coastline of the southeastern United States today with lagoons, lush vegetation and a subtropical climate.)

(Note No. 2 Most of these fossils have been found in Upper Cretaceous outcrops in New Mexico, eastern Wyoming, Missouri River badlands in Montana and in southern Alberta, Canada.)

Fossils Found in Makoshika

Zoological Order	Sub-order	Family or Species	Part of Animal	Frequency	Extant (A) or Extinct (B)
DINOSAURS:					
Saurischia	Theropoda	Ornithomimus (ostrich-like dino)	toebone	2	B
	Carnosauria	Dryptosaurus	tooth	3	B
			skull fragment	3	
		Tyrannosaurus Rex	tooth	3	B
			toebone	3	
			vertebra	3	
		Sauropoda?	tarsal bone?	3	B
Ornithischia	Ornithopoda	Thescelosaurus	limb bone (femur)	3	B
		Hadrosaurus (duck billed dino)	tooth	1	B
			jawbone	2	
			limb bone	2	
			toe bone	3	
			vertebra	2	
		Pachycephalosaurus	skull ornament	3	B
	Ankylosauria	Ankylosaurus	tooth	3	B
		Nodosaurus	dermal scute	3	B
	Ceratopsia	Triceratops	vertebra	2	B
			tooth	1	
			jawbone	2	
			horn core	2	
			limb & toe bones	2	
			shield (frill)	1	

FOSSIL MAMMALS AND BIRD (all rare, all extinct)

Zoological order	Sub-class	Order	Species or or genus	Part of Animal
Mammalia	Allotheria	Multituberculata	Meniscoessus borealis	tooth
	Theria	Marsupialia	Pediomys hatcheri	teeth in jawbone
			Didelphodon vorax	tooth
Avifauna (bird)		Gaviiformes	Lonchodytes (loon like)	cervical vertebra tarsometatarsal

FOSSIL FLORA

Three "medium-rare" specimens of passing interest have been found in Makoshika Park. They are "figs", leaf prints and molds of the sequoia cone.

"Figs", so identified by paleobotanist Knowlton in the 1900's, were conjectured by paleobotanist Roland Brown in the 1930's to be underground tubers of the equisetum, and in the 1960's, paleobotanist Graham hypothesized them to be the fruit of the guarea tree. They have been found only in the Hell Creek (or "Lance" in Wyoming) formation, their identity still enigmatic.

Leaf prints from both the Colgate member of the Fox Hills sandstone and Hell Creek formations indicate a family of ginkgo trees, sometimes called maidenhair trees, thrived there. The only surviving species is native to the Orient.

Molds, or reverse casts, of the sequoia cone are intriguing. The giant redwoods are native today in California and Oregon, one of which is as high as a 27-story building.

The above list was compiled in 1974 and provided courtesy of D. Robert W. Hiatt.

APPENDIX B

LAND CAPABILITY CLASSIFICATION
For
Makoshika State Park

Capability Unit 3e2

This unit consists of moderately deep to deep, well-drained, soils on uplands. The soil is fine sandy loam to depths of more than 60 inches in most places, but has clay loam layers below 40 inches in some places. Permeability is moderate to moderately rapid, and the available water capacity is moderate. Fertility and organic-matter content are moderate to high. These soils have a high erosion hazard. Stripcropping and leaving crop residues on the soil surface of fallowed strips are necessary to control soil blowing. 1-4% slope.

Capability Unit 4e3

This unit consists of moderately deep to deep, well-drained to somewhat excessively drained, soils on uplands. These soils have fine sandy loam to loamy fine sand surface and sub-surface layers. Permeability is moderately rapid and the available water capacity is low to moderate. Fertility and organic-matter content are low to moderate. Surface runoff is medium. The hazard of soil blowing is very high. 2-8% slope.

Capability Unit 6e1

This unit consists of nearly level to moderately steep soils. These soils have strongly alkaline to very strongly alkaline layers at the surface or at very shallow depths. Textures of the surface and subsurface layers range from loam to clay. The permeability is slow to very slow, and the available water capacity is moderate to high. Fertility and organic-matter content are low. Surface runoff is slow to medium.

Capability Unit 6e2

This unit consists mainly of deep, somewhat excessively drained, steeply to very steeply sloping soils on the uplands. These soils have loamy sand to loamy fine sand textures to depths of 60 inches or deeper. Permeability is rapid and the available water capacity is low to moderate. Fertility and organic-matter content are low. Surface runoff is slow to medium. 8-25% slope.

Capability Unit 6e3

This unit consists mainly of steep to very steep soils on dissected uplands. Surface and sub-surface layers range in texture from loam to silty clay loam. Permeability is moderate to slow, and the available water capacity is high. Surface runoff is rapid to very rapid.

Capability Unit 8e1

This unit comprises the steep to very steep, severely eroded and broken slopes formed by down-cutting into the soft, sandy, silty, and clayey sedimentary beds that underlie the county. Active erosion makes this land useless except for its scenic values.

THE LAND CAPABILITY CLASSIFICATION

Your conservation plan is fitted to the conditions on your farm, ranch, or other resource area. The first step is a careful survey of the soils, including slope, erosion and other features.

The capability classification is a practical grouping of soils. Soils and climate are considered together as they influence use, management, and the kinds of crops that can be grown.

The classification contains two general divisions: (1) Land suited for cultivation and other uses, and (2) land limited in use and not best suited for cultivation. Each of these broad divisions has four classes which are shown on the map by an Arabic numeral. The hazards and limitations in use increase as the class number increases. Class 1 has few or no hazards or limitations, whereas class 8 has a great many.

Capability classes are divided into subclasses. These show the principal kinds of problems involved. The subclasses are: "e" for erosion, "w" for wetness, "s" for soil, and "c" for climate, short growing season or drouthy conditions.

LAND SUITED FOR CULTIVATION AND OTHER USES

CLASS 1 Soils in Class 1 have few or no limitations or hazards. They may be used safely for growing a wide variety of cultivated crops, for pasture, range, woodland, and wildlife.

CLASS 2 Soils in Class 2 have few limitations or hazards. Simple conservation practices are needed when cultivated. They are suited for most of the cultivated crops commonly grown in the area, for pasture, range, woodland and wildlife.

CLASS 3 Soils in Class 3 have more limitations and hazards than those in Class 2. They require more difficult or complex conservation practices when cultivated. They are suited for growing fewer cultivated crops than soils in Class 2, and for pasture, range, woodland and wildlife.

CLASS 4 Soils in Class 4 have greater limitations and hazards than Class 3. Still more difficult or complex measures are needed when cultivated. They are suited for growing only a few cultivated crops, and for pasture, range, woodland and wildlife.

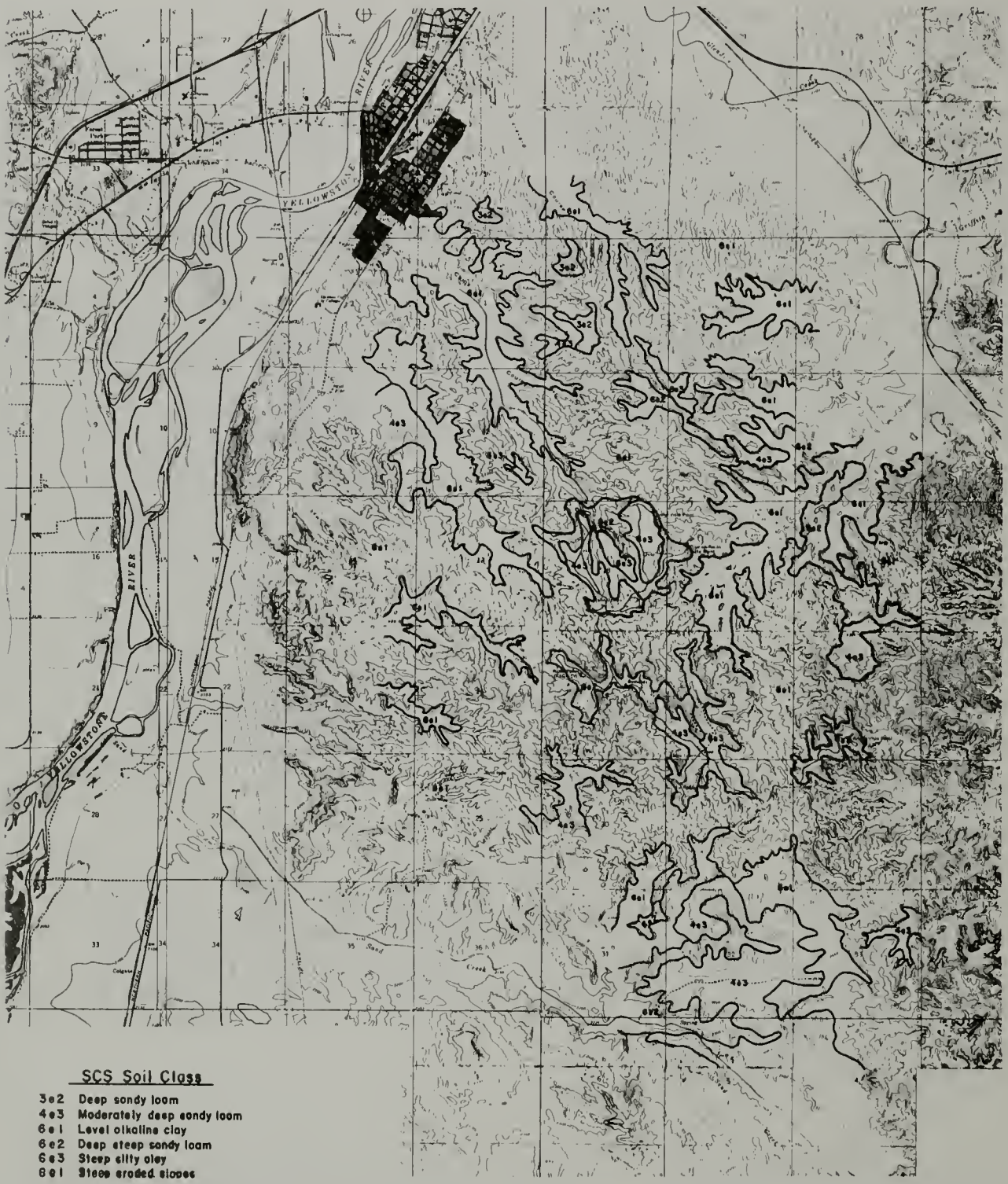
LAND LIMITED IN USE--GENERALLY NOT SUITED FOR CULTIVATION

CLASS 5 Soils in Class 5 have little or no erosion hazard but have other limitations that prevent normal tillage for cultivated crops. They are suited for pastore, range, woodland and wildlife.

CLASS 6 Soils in Class 6 have severe limitations or hazards that make them unsuited for most cultivation. They are suited generally for pasture, range, woodland and wildlife.

CLASS 7 Soils in Class 7 have very severe limitations or hazards that make them generally unsuited for cultivation. They are suited for range, woodland and wildlife.

CLASS 8 Soils and land forms in Class 8 have limitations and hazards that prevent their use for cultivated crops, pasture, range, or woodland. They may be used for recreation, wildlife and water supply.



SCS Soil Class

3e2 Deep sandy loam
4e3 Moderately deep sandy loam
6e1 Level alkaline clay
6e2 Deep steep sandy loam
6e3 Steep silty clay
8e1 Steep eroded slopes

APPENDIX C

MAKOSHIKA Wild Flowers Photographed and Identified by Dr. R. W. Hiatt, Glendive, 1971

Date First Observed	One Common Name of Plant	Scientific Name	Color of Flower	A - Annual B-Biennial P–Perennial
APRIL:				
12	Pasque flower	1. Anemone patens	P	P
22	Simple-leaf buttercup	2. Ranunculus glaberrimus	Y	P
30	Moss phlox	3. Phlox hodii	W	P
	Wild Yellow Parsley	4. Lomatium foeniculaceum	Y	P
MAY:				
2	Whiskbroom parsley	4. Lomatium orientale	W	P
	Golden banner	6. Thermopsis rhombifolia	Y	P
7	Prairie vetch	7. Vicia sparsifolia	P	P
	Tufted milkvetch	8. Astragalus triphyllus	W	P
9	Bladderpod	9. Lesquerella alpina	Y	P
	Rocky Mountain loco	10. Oxytropis sericea	W	P
	?	11. Astragalus sp ?	P	P
	Dandelion	12. Taraxacum officinale	Y	P
	Yellow Violet	13. Viola nuttallii	Y	P
	Missouri milkvetch	14. Astragalus missouriensis	P	P
10	Sand lily	15. Leucocrinum montanum	W	P
12	Wavyleaf dandelion	16. Agoseris cuspidata	Y	P
	Wormseed mustard	17. Erysimum chieranthoides	Y	B
	Butte primrose ("gumbo lily")	18. Oenothera caespitosa	W	P
	Perky Sue	19. Hymenoxys acaulis	Y	P
	Pennycress	20. Thlapsi arvense	W	A
	Bastard toadflax	21. Comandra umbellata	W	P
15	Small erysimum	22. Erysimum parviflorus	Y	B
	White wild onion	23. Allium textile	W	P
	Light blue beardtongue	24. Penstemon augustifolius	B	P
17	Hairy stickseed	25. Lappula redowski	B	A
	Pincushion cactus "No. 1"	26. Mamillaria missouriensis	B	P
	Butte Candle	27. Crypantha bradburiana	W	B
	Flaxleaf plains mustard	28. Sisymbrium linifolium	Y	A
19	Pussytoes "No. 1"	29. Antennaria microphylla	Y	A
23	Blue beardtongue ("No. 2")	30. Penstemon sp ?	B	P
	Small lupine	31. Lupinus pusillus	B	A
	Pussytoes "No. 2"	32. Antennaria rosea	W	P
	Tansy Mustard	33. Descurainia pinnata	Y	A
	Deathcamas	34. Zygadenus gramineus	Y	P
	Narrow-leaved puccoon	35. Lithospermum incisum	Y	P
	Comb-leaf loco	36. Astragalus pectinatus	W	P
	White beardtongue	37. Penstemon albidus	W	P
	Yarrow	38. Aebillea lanulosa	W	P
24	Chickweed	39. Cerastium arvense	W	P
	Showy dock	40. Rumex venosus	R	P
	Western wallflower	41. Erysimum asperum	Y	B
	Plains yellow-green paintbrush	42. Castilleja sessiliflora	Y	P
	Lambstongue groundsel	43. Senecio integerrimus	Y	P
	"Narrow-leaved (lilac) beardtongue"	4. Penstemon sp?	P	P
	Purple Loco	45. Oxytropis lambertii	P	P
25	Blue-eyed grass	46. Sisyrinchium angustifolium	B	P
	One-headed arnica	47. Arnica fulgens	Y	P
28	Low daisy	48. Erigeron pumilis	W	P
	Stiffstem flax	49. Linum rigidum	Y	A
	Salsify	50. Tragopogon pratensis	Y	B

JUNE.

1	Evening primrose	51. Oenothera albicaulis	W	A
	Red Mallow	52. Sphaeralcea coccinea	R	P
	Yellow sweet clover	53. Melilotus officinalis	Y	B
	Bee Plant	54. Cleome serrulata	P	A
2	White milkwort	55. Polygala alba	W	P
	Gaura	56. Gaura coccinea	R	P
	Mariposa lily (sego lily)	57. Calochortus nuttallii	W	P
3	Wild Rose	58. Rosa arkansana	R	P
5	Prickly pear (cactus)	59. Opuntia polyeantha	Y	P
	Hoary aster	60. Aster canescens	P	B
	Crested beardtongue	61. Penstemon eriantherus	P	P
	Sulphur flower	62. Eriogonum flavum	Y	P
	"Foot-tall" daisy	63. Erigeron glabellus	W	P
	Slender milkvetch	64. Astragalus flexuosus	P	P
6	Spiderwort	65. Tradescantia occidentalis	B	P
8	Dogbane	66. Apocynum sibericum	R	P
	Narrowleaf sunflower	67. Helianthus petiolaris	Y	A
	?	68. Astragalus goinatus	P	P
	Ragwort	69. Senecio sp ?	Y	
9	Dainty sundrops	70. Oenothera serrulata	Y	P
	Grass-leaved loco	71. Astragalus ceramicus	W	P
10	Scurf pea	72. Psorlea lanceleolata	P	P
11	Harebell (Bluebell)	73. Campanula rotundifolia	B	P
15	Prairie milkvetch	74. Astragalus striatus	P	P
	Silver Leaf	75. Psoralea argophylla	B	P
	Goldaster	76. Chrysopsis virlosa	Y	P
	Prairie bird's-foot trefoil	77. Lotus americanus	W	A
	Flodman's thistle	78. Cirsium flodmanii	P	P
	Skeleton weed	79. Lygodesmia juncea	Pk	P
17	Yucca	80. Yucca glauca	Y	P
	Pincushion cactus "No. 2"	81. Mamillaria vivipara	P	P
20	Kansas sunflower	82. Helianthus annuus	Y	A
	Slender beardtongue	83. Penstemon gracilis	P	P
22	Blue Lettuce	84. Lactuca pulchella	B	P
24	Snowy milkweed	85. Asclepias speciosa	R	P
	Tumbling mustard	86. Sisymbrium altissimum	Y	A
	Field bindweed	87. Convolvulus arvensis	W	P
28	Prairie coneflower	88. Ratibida columnifera	Y	P
	Ground plum (first found podded)	89. Astragalus caryocarpus	P	P
	Green milkweed	90. Acerates viridiflora	W	
	White sweet clover	91. Melirotus alba	W	B
	Snowberry	92. Symphoricarpos albus	Pk	P
	Alfalfa	93. Medicago sativa	P	P
29	Buffalo bur	94. Solanum rostratum	Y	A
	Gumweed	95. Grindelia squarrosa	Y	B
	Stiff sunflower	96. Helianthus rigidus	Y	P
30	Purple coneflower	97. Exchinacea augustifolia	P	P
	Wild licorice	98. Glycyrrhiza lepidota	W	P
	Purple prairie clover	99. Petalostemon purpurem	P	P
	Rillscale	100. Atriplex dioica	Pk	A

JULY:				
2	Owl Clover	101. Orthocarpus lutens	Y	A
	Maximilian sunflower (sp ?)	102. Helianthus maximiliani	Y	P
4	Rabbitbrush	103. Chrysoenthamnus grav.	Y	P
6	White prairie clover	104. Petalostemon candidum	W	P
11	Narrow-leaved goosefoot	105. Chenopodium leptephyllum	G	A
	Fringe-cup	106. Mirabilis linearis		P
12	Fetid marigold	107. Dyssodia papposa	Y	A
	Dwarf milkweed	108. Aselepias pumila	W	P
18	Early goldenrod	109. Solidago missouriensis	Y	P
	Whorled milkweed	110 Asclepias verticillata	W	P
	Iron plant	111. Haplopappus spinulosus	Y	P
	Rough white aster	112. Aster communtatus	W	P
26	Evening star	113. Mentzelia decapetala	W	B
	Snakeweed	115. Gutierrezia sarothrae	Y	P
	Clammy weed	115. Polanisia graveolens	W	A
	Cut-leaved nightshade	116. Solanum triflorum	W	A
	Groundcherry	117. Physalis virginiana	Y	
	Plume eriogonum	118. Eriogonum annuum	W	A
	White-flowered spurge	119. Euphorbia missurica	W	A
31	Soft goldenrod	120. Solidago mollis	Y	P
	Gayfeather	121. Liatris punctata	P	P
	Prickly Lettuce	122. Lactuca serriola	Y	A
AUGUST:				
	NONE			
SEPTEMBER:				
19	Lance-leaved sage	123. Salvia reflexa	B	A
	Many-flowered aster	124. Aster ericoides	W	P
30	White prairie aster	125. Aster falcatus	(purplish W)	P

CONTEMPORARY FLORA (Modern Vegetation)

Although the preceding enumeration of the 1971 Makoshika wild flower parade is probably incomplete, its author with color slides of each plant proffers the challenge to anyone to discover a greater variety of flora in other badlands of Montana, North and South Dakota, Nebraska and wherever. Which is another way of saying timber, shrubs, grasses, and flowers are more in evidence here than in other American badlands.

Ponderosa (Western yellow) pine and "badlands cedar" (Rocky Mountain red juniper) are the preponderant trees.

Shrubs indicative of heavy and alkaline soils are sagebrush, greasewood, rabbitbrush, saltbush, and seepweed.

Some grasses are Western wheatgrass, slender wheatgrass, western sticktight, Indian ricegrass, scarlet gaura, Douglas dusty maiden, and squirreltail.

BIBLIOGRAPHY

Geology:

Montana in the Geologic Past, Montana Bureau of Mines and Geology, Bulletin 26, 1962, by Eugene S. Perry

Dinosaurs, Their Discovery and Their World, E. P. Dutton & Co., New York, 1961, by Edwin H. Colbert.

Paleocene flora of the Rocky Mountains and Great Plains, Geological Survey Professional Paper 375, 1962, and Fossil Plants from the Colgate member of the Fox Hills sandstone and adjacent strata, U. S. G. S. Prof. Paper 189-I, 1939, both by Roland W. Brown.

Paleontology.

Montana in the Geologic Past, Perry (See Geology)

Dinosaurs, Colbert (See Geology)

Fossil Vertebrates from the Late Cretaceous Lance formation Eastern Wyoming, University of California Publications in Geological Sciences Vol. 49, Univ. of Calif. Press, Berkeley, 1964, by Richard Estes

Cretaceous Vertebrate Faunas of Wyoming, Wyoming Geological Association, Guidebook, Nineteenth Field Conference, 1965 by John H. Ostrom.

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DEPARTMENT OF SOCIOLOGY

COLLEGE OF LETTERS & SCIENCE MONTANA STATE UNIVERSITY, BOZEMAN 59715

30 April 1979

Mr. Richard Mayer, Chief
Design and Construction Bureau
Parks Division
Montana Department of Fish and Game
1420 East Sixth Avenue
Helena, MT 59601

RE: Makoshika State Park

Dear Dick:

Steve Aaberg and Jack Fisher spent a week in the Glendive area surveying Makoshika State Park. Since the park management area covers about eight sections, the terrain was covered selectively in that time. All the landform types in the park were sampled. In addition, the area currently developed and those planned for the future were inspected carefully. The areas around the road slump and the proposed new route were also surveyed. The site of the proposed rifle range was investigated and three flakes were recovered from the road cut. Cultural materials here were too widely and lightly scattered to warrant further assessment work. Inspection of cutbanks in the locality did not reveal buried deposits.

Buried bone and a light organic stratum containing charcoal were discovered at two locations, and bones of deer and bison were discovered about 35 centimeters below surface at another location. The first two sites are definitely cultural. The first location in the SW¼NE¼ Sec. 12 lies on the north side of the road on the north side of Cains Coulee. Bones of bison were collected from a very light cultural stratum about 2.8 meters below surface. Some flecks of charcoal were evident in the stratum, but not in sufficient quantity for a radiocarbon dating. No lithic debris or features were evident in the stratum. The site is in no danger from recreationists and is not eroding badly. Although available evidence does not suggest the immediate need for large-scale testing, the site should nevertheless be closely monitored as more cultural materials are exposed.

A second location in NE¼NW¼ Sec. 12 yielded a metacarpal from a large ungulate, probably bison. A very light cultural stratum containing a few flecks of charcoal occurs about 30 centimeters below the surface. The stratum is only expressed along about 10 meters of cutbank. The site is well away from currently used areas and the road and appears to be in no immediate danger from recreationists. The very sparse cultural materials indicated do not warrant further work at the present time. The site should be monitored since additional cultural materials may become exposed.

TELEPHONE (406)994-4201

Thirteen upland locations yielded lithic debris which ranged in density from a single flake to heavy, localized concentrations. Three of these locations yielded fragmentary projectile points from each of the three regional prehistoric periods. Two of those sites contain moderate to heavy amounts of lithic debris. The south end of the developed butte in Section 18 contains the most dense concentration of lithic material and yielded two points. The sites here are exposed in existing secondary trail ruts. Both are easily visible and may have been collected previously. Aeolian sediment has accumulated to an unknown depth and it is possible there may be buried cultural deposits with preserved context in the vicinity. Subsurface testing is necessary to determine the nature and significance of cultural remains in this area. In the meantime, the sites in this portion of the butte will continue to be degraded by traffic and activities associated with recreational use of the park; one site is exposed around picnic tables.

A third upland location in the NW¼ of Sec. 19 is exposed in existing trail ruts. The nature and significance of cultural deposits here cannot be determined without testing. The base of an Early Period projectile was recovered at this site.

This preliminary survey of portions of the park demonstrates that surficial and subsurficial prehistoric cultural remains are present in both the uplands and along lowland drainages. It would take months of survey with a large crew to cover all the Makoshika. If development is planned for other parts of the park, cultural resources must also be taken into consideration. It is quite probable that more site localities occur in the substantial portions of the park which have not yet been surveyed.

The paleontological potential of Makoshika is known and has been documented by numerous amateurs and professionals. We cannot comment professionally on those resources; however, geologist/paleontologist specialists should be consulted as development plans progress.

Sincerely yours,

Les

Leslie B. Davis
Professor
Anthropology

SAA:LBD:mj

cc: Dan Vincent

Attachment

BURIED NATURAL STRATUM (HEARTH & CHARCOAL)
Coulee Flakes
CULTURAL STRATUM (CHARCOAL)
Eyeball Vista Point
Flake
Pine-on-Rocks Vista Point
Radio Towers
Badlands
Radio Towers (KXGN-TV)
Arliss Vista Point
Flakes
18
17
16
19
20
21
24

APPENDIX E

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN
RECOMMENDATION-ANALYSIS-DECISION

Name (MFP)	Redwater
Activity	Visual Resources
Overlay Reference	Step 1 VR-1.1 Step 3

Recommendation: VR-1.1

VRM Class II

This class requires management or development activities to be designed and located to blend into the natural landscape, and not to be visually apparent to the casual visitor. A management activity may repeat the visual elements common in the surrounding landscape, only if this repetition does not significantly change the essential quality of the existing features.

(a) Bureau projects which modify landform, vegetation or structures will complete a contrast rating form. Significant impacts should be mitigated.

(b) The following activities should be discouraged:

1. New roads and their support needs.
2. Above ground utility systems.
3. ORV use.
4. Surface mining/drilling.

Support Needs:

A specialist with VRM training would apply contrast ratings and mitigations to proposed project to determine whether the action would meet the VRM class.

Rationale:

The property identified as Land Class II represents landscape units with unique or quality visual elements. The protective posture of this recommendation reflects an effort to maintain the natural composition of each landscape unit.

The following visual elements contributed to land class II selection.

* Missouri & Yellowstone River - Water orientation, cottonwood bottomlands, variable relief along shoreline, seasonal color changes, and some badland zones.

* Makoshika State Park - This State Park highlights a badlands ecosystem and, as such, deserves protection.

* Beaver Creek - Meandering riparian zone located in a prairie grassland. The vegetative contrast was judged significant.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN
RECOMMENDATION-ANALYSIS-DECISION

Name (MFP)
Redwater

Activity
Visual Resources

Overlay Reference
Step 1 Step 3

VR-1.1 Continued

* Badlands - There are several pockets of badland property which were evaluated as Land Class II property. In most cases the rough terrain coupled with soil color and vegetation set these units apart from surrounding landscape.

Summary of Proposal:

A.	Proposal Conflicts With:	This recommendation conflicts with those resource activities which are development oriented (forestry, range, lands, minerals).
B.	Nature of Conflicts:	Disturbance of the visual character as a result of manmade intrusion.
C.	Economic Values:	Extra expense related to project design and mitigating action.
D.	Environmental Values:	Maintain the visual quality of public land.

Multiple Use Analysis:

The benefits from this recommendation will not be shared with other resource specialists. The general public benefits from this recommendation through the protection of scenic values.

Multiple Use Recommendation:

Perform a contrast rating on all Bureau projects on Class II VRM lands and adhere to VRM constraints where feasible.

Decision:

Accept Multiple Use Recommendation.

Note: Attach additional sheets, if needed

APPENDIX I

REGIONAL RECREATION SURVEY
Region 2
Fish and Game Dept.

Good evening,
We are conducting a telephone interview for the Montana State Parks and Recreation Division and my name is _____.

The purpose of the interview is to determine the public 's generall attitude toward the park and recreation areas in the northeast region of the state. Would you like to participate in the survey? Thank you. Do you prefer to remain anonymous? yes___ no __ (Name _____)
We hope to use the survey results to help plan for future recreational development in your part of the state.

1. To begin, do you or your family occasionally make use of the parks and recreat areas in your part of the state, primarily in the region between the Fort Peck Resersvoir and the Makoshiak state park badlands areas. Yes __ no __

2. What recreation areas do you customarily visit? (make check mark as needed

Fort Peck Reservoir ___
Hell Creek _____
Rock Creek _____
Devils Creek _____
C. Russell Range _____
Missouri R. _____
Yellowstone R. _____
Other _____
_____

Gartside Dam Fish Acc. _____
Intake Dam _____
Johnson Reservoir _____
Clark Campground _____
Private Farm Ponds _____
Farm and Ranch lands _____
Makoshika State Park _____

3. Have you visited all areas in your region? yes _____ no _____
comments, if volunteered _____
_____

4. What are your family's favorite areas ? _____
Place an x beside the favorite, noting which is 1st and 2nd, etc.

5. About how many times a summer season do you visit your favorite areas?
(Place a number beside the appropriate area above.)

6. What attracts you especially to your favorite area? (make check marks)

camping _____ fossil hunting _____ general outdoor environment _____
fishing _____ rock hounding _____ water surface areas _____
boating _____ hunting _____ change of pace _____
swimming _____ hiking _____ rest and relaxation _____
_____
_____

7. Are you generally satisfied with the areas? yes _____ no _____

8. If no , what do you find lacking or objectionable?(Show park area name)

Facilities
camping _____
picnicking _____
sanitary _____
boat ramps _____
swimming _____
drinking water _____
roads _____
trails _____
garbage _____

Site Conditions
crowded _____
lack shade _____
windy, dusty _____
poor vegetative cover _____
littered _____
_____
_____
_____
_____

Management

area overused _____
need enforcement _____
cleanup needed _____
object to costs _____
_____
more regulations _____
less regulations _____

Conflicts with Other Users

noise _____
unruly behavior generally _____
motorcycles _____
dogs, unleashed _____
_____

9. Do all age groups in your household find some satisfaction at the various areas? yes ____ no _____ dont know_____

10. What is needed for given age groups ?

_____

_____

11. Are you aware of any problems for the handicapped relative to use of the parks and recreation areas? Indicate: _____

_____

_____

_____

12. For any recreational vehicle you may have such as campers, snowmobiles, etc. , are there any problems in finding adequate areas on which to use them ?

Vehicle	Problem
Camper _____	_____
4 wheel drive or jeep _____	_____
snowmobile _____	_____
motorcycle or bike _____	_____
boating equipment _____	_____
other _____	_____

13. Do you feel you have adequate information on recreation resources and opportunities in your region? yes _____ no _____

_____

_____

14. To summarize this portion of the interview, what would you say are the major basic problems in outdoor recreation in your region, and what recommendations do you have for the state in resolving them.

Problems Indicated	Recommendations
_____	_____
_____	_____
_____	_____

15. Because Makoshika State Park is a prominent recreation resource in your region and because there will be further development and improvement there , we are interested in some specific information on that area. Would you care to discuss some matters with us?

If yes, go to following page.

16. How often does your family use Makoshika during the summer season? _____

17. What are the primary a ractions that bring you t. Makoshika:

a. pleasure driving ___
b. scenic views _____
c. photography _____
d. showing tourists ___
e. climatic relief ____
f. fossils _____
g. geology _____
h. wildlife_____
i. plant life _____
j. rockhounding____
k. camping _____
l. picnicking _____
m. hiking-walking____
n. solitude _____
o. rest, relaxation__

_____

_____

18. What conditions at Makoshika tend to limit your use of the park?

_____

_____

19. Are your visits generally satisfactory to you? _____yes _____ no

20. Makoshika consists of 160 acres of land which is owned, and 624 acres of land which is leased. Do you favor expansion of park size over this amount: yes _____ no _____

21. It has been suggested that thepark be closed to the general public from Oct. to March. Do you agree ? yes _____ no _____

22. A three day camping limit has been suggested. Do you agree? yes __ no __

23. It has been suggested that camping trailers be allowed only at the lower elevations near the entrance genrally, and specifically prohibited at the higher elevations in the interior areas. Do you agree? yes __ no __

24. Similarly, it has been suggested that for camping, tents only be permitted in the upper areas in the interior of the park. Do you agree? yes __ no__

25. For the fossils found in the area, the state has contemplated modest structures sheltering displays as they are found in nature . Do you favor a museum building for fossil and other displays on the park? Agree _____ Disagree _____ . Comments _____

_____

26. PLease indicate by yes or no if you think additional development of the following items would be desirable:

camping _____
picnicking _____
wells _____
sanitary _____
road surface ___
visitor overlooks ____
road turnouts _____
caution signs _____
boundary markers _____
fossil exhibits _____
other exhibits _____
hiking trails _____

27. If the park enlarges in size, do you favor development at Sand Creek? yes _____ no _____ . Volunteer comments. _____

28. Do you favor a loop road connecting the park with adjacent lands? yes__no__

29. Hunting has been permitted during offical game seasons. Do you have any objection to hunting in the park? yes __ no __

30. Grazing has been permitted in the off recreation season. Do you feel grazin has limited your recreation use in any way? yes __ no __

31. What overall problems for Makoshika do you see , and what do you recommend to the state?

REGION 2 RECREATION SURVEY TABULATIONS

Glendive Area

1. Do you or your family use areas in your part of the state? Yes--223; No--45

2. What areas do you visit often?

Total	Area	Total	Area
221	Makoshika	12	C. M. Russell Game Range
168	Intake Dam	12	Hell Creek
117	Fort Peck	10	Missouri River
99	Yellowstone River	7	McGuire Creek
57	Rock Creek	7	Nelson Creek
50	Johnson Reservoir	6	Lindsay
44	Gartside Dam	5	Kuester Reservoir
33	Farm & Ranch Lands	4	Yellowstone Park
26	Private Ponds	23	Other
17	Clark Campground		

3. Do you try to visit all areas in the region? Yes--107; No--167

Comments:

Total	Comment
3	Improve roads & access
2	Visit close-by areas
1	Areas are too poorly developed

4. Which are your favorite areas? (1st, 2nd, 3rd)
5. How often do you visit them each summer? (average visits)

Area	1st	2nd	3rd	Average Visits
Makoshika	119	22	6	8
Intake	40	44	14	7
Fort Peck	34	21	4	5
Rock Creek	18	4	0	8
Yellowstone	12	13	7	10
Farm & Ranch Lands	4	1	2	2
Johnson	4	4	3	7
Gartside	3	4	0	4
C.M. Russell	1	1	0	2
Private Ponds	0	1	0	8
Devil's Creek	0	0	0	0
Clark	1	3	0	4
Other	14	6	1	

6. What attracts you to your favorite area?

Total	Attraction	Total	Attraction
178	Rest & Relax	33	Rock Hound
162	Fish	33	Water Sur. Activities
122	General Outdoor Environment	31	Fossil Hunt
102	Camp	7	Picnic
84	Change of Pace	2	Church Services
70	Boat	1	Archery
57	Hike	1	Have cabin there
51	Hunt	1	Lions Camp
48	Swim	1	Pleasure Driving

7. Are you generally satisfied with the areas? Yes--228; No--36

8. What do you find objectionable?

	Makoshika	Intake	Rock Creek	Bear Creek	Lindsay	Hell Creek	Fort Peck	Nelson	McGuire	Clark	Gartside	All	Other	Total
Camping	2	1										2		5
Picnic	2	1										2		5
Sanitary	6	1	1	1								2		11
Boat Ramps		1	2		1							2		6
Swim	1	1				1						2		5
Water	4	2				1	1	1				2		11
Roads	16	1	1					2	3	1		3		27
Trails	3											2		5
Garbage	2	2		1								2		7
Area Overused	4	4	1				1					2		12
Enforcement		1	1									2		4
Clean-up	6	1									1	2		10
Costs														0
More regulations												1		1
Less regulations												1		1
Crowded	1	8	1									1		11
Lacks Shade	6	5	1				1				2	2		17
Wind, Dust	4	1	1				1					2		9
Poor Vegetation	3		1				1					2		7
Litter	7	1	1	1	1						2	2		15
Bugs												1	1	1
Noise			1									2		3
Unruly Behavior		1										2		3
Motorcycles	3		1								1	2		7

9. Does all of your family find some satisfaction at the areas? Yes--257; No-10

10. What is needed?

Total	Needed	Total	Needed
17	Playground	1	Wading Pool
7	Picnic Tables	1	Trails
3	Games & Activities	1	Ballfield
2	Planted fish area for kids	1	Indoor Bath
1	Swim area for kids	1	More Recreation Facilities

11. Are you aware of any problems handicapped have at areas?

Total	Need/Problems
19	Better access (roads, trails)
16	Terrain too steep and rough
6	Accessible rest rooms
1	Shelters

12. Problems finding areas for recreational vehicles? Yes--27; No--163

Problems	Camper	4-Wheel	Snowmobile	Motrocycle	Boat Equip.	Other Car	Pickup	Total
Water	1							1
Restrooms	1							1
Spaces	1							1
Garbage disposal	1							1
Parking	2							2
Litter	1							1
Roads	4	2				3	3	12
Utility hookups	1							1
Trails		1	7	5				13
Rules			1					1
Access to private lands		1						1
Sanitation			1					1
Racetrack				1				1
Area too small					1			1
More ramps					3			3
Too far to go					1			1

13. Do you have adequate recreation information? Yes--204; No--58

Total	Need
5	Map of Makoshika
2	New areas need advertisement
1	Map of small dams
1	Information on backpacking
1	Plant fish

14. Major regional recreation problems and recommendations.

Total	Problems/Recommendations
30	Improve roads
14	Garbage & litter
13	More water recreation areas (swim,boat)
10	Water for drinking
6	More fishing areas
6	Develop recreation areas
6	Plant fish (blue gills & crappies, perch at Johnson, walleye & perch at Lindsay; print about newly planted fish)
5	Caretakers
4	Trees needed
3	Proportionate share of recreation money in eastern Montana
3	More winter uses & activities
3	More recreation facilities
3	Signs needed
3	Vandalism & neglect
2	Needs publicity
2	Build Clear Creek project
2	Rules & enforcement
2	Boat launches
2	Raise water level at Fox Lake
2	Minimize number of out-of-state hunters
2	More hunting areas
2	More dams needed
2	Culverts
1	Others

15. Sex of Respondent: Male--121; Female--152

MAKOSHIKA STATE PARK

16. How often does your family use Makoshika during the summer?

Total: 1176; Average: 6 times

17. Primary attractions:

Total	Attractions	Total	Attractions
164	Picnic	44	Fossils
159	Scenic views	35	Church services
135	Rest & relax	35	Wildlife
114	Driving	31	Plant life
93	Showing tourists	26	Rock hounding
80	Hike & walk	15	Climate
60	Solitude	8	Geology
49	Camp	1	Others

18. Conditions that limit use of park:

Total	Conditions	Total	Conditions
74	Roads	1	Dirty
25	Water	1	Litter
13	Weather	1	Transportation
7	Muddy Roads	1	More picnic tables
3	Unruly behavior	1	General improvement
2	More restrooms	1	Not safe for kids
2	Wind	1	need more road signs
2	Not much there	1	More activities
2	Camping facilities	1	Dust
1	Fire hazard	1	Needs a lake
1	Shade	1	Trails
1	No fish	1	Governmental regulations & rules
1	Desolate		

19. Are your visits generally satisfactory? Yes--235; No--20

20. Do you favor expansion of park size? Yes--107; No--147

Comments: develop what is there
too much vandalism would occur

21. Close park October to March? Yes--111; No--133

Comments: open until snow falls
November to March--2
improve road if open all year

22. Favor three-day camping limit? Yes--118; No--135

Comments: only if crowded
if better equipped camp area

23. Prohibit camping at higher elevations? Yes--144; No--85

Comments: hard to get these because of roads--5
need sewage disposal

24. Tent camping only at higher elevations? Yes--105; No--140

25. Museum preference and location:

Total - Prefer: 199		Total - No Museum: 70
112	Glendive	
80	Glendive	
7	In existing museum	

Comment: Field display at Badlands National Monument doesn't work.
Suggests interpretive building below park--1.

26. Desire additional development in Park?

	Yes	No
Camp	109	53
Picnic	122	37
Wells	179	17
Sanitary	137	31
Roads	174	39
Overlooks	75	75
Turnouts	90	71
Signs	143	47
Markers	101	58
Fossil Ex.	93	39
Other Ex.	47	51
Hike trails	110	50
Guard rails	2	
Geolog. Interp.	1	

27. Develop Sand Creek Areas if park enlarged? Yes--126; No--91

Total	Comments
13	Not familiar with it
10	Too expensive
2	Bike & cycle trails
2	Improve roads
1	Don't like area
1	Back road in
1	Loop road to Sand Creek Road
1	Make in a primitive area

28. Favor loop road to connect park with adjacent lands? Yes--184; No--65

29. Objection to hunting in park during season? Yes--175; No--98

30. Has grazing limited your use of park? Yes--63; No--204

31. Problems at Makoshika:

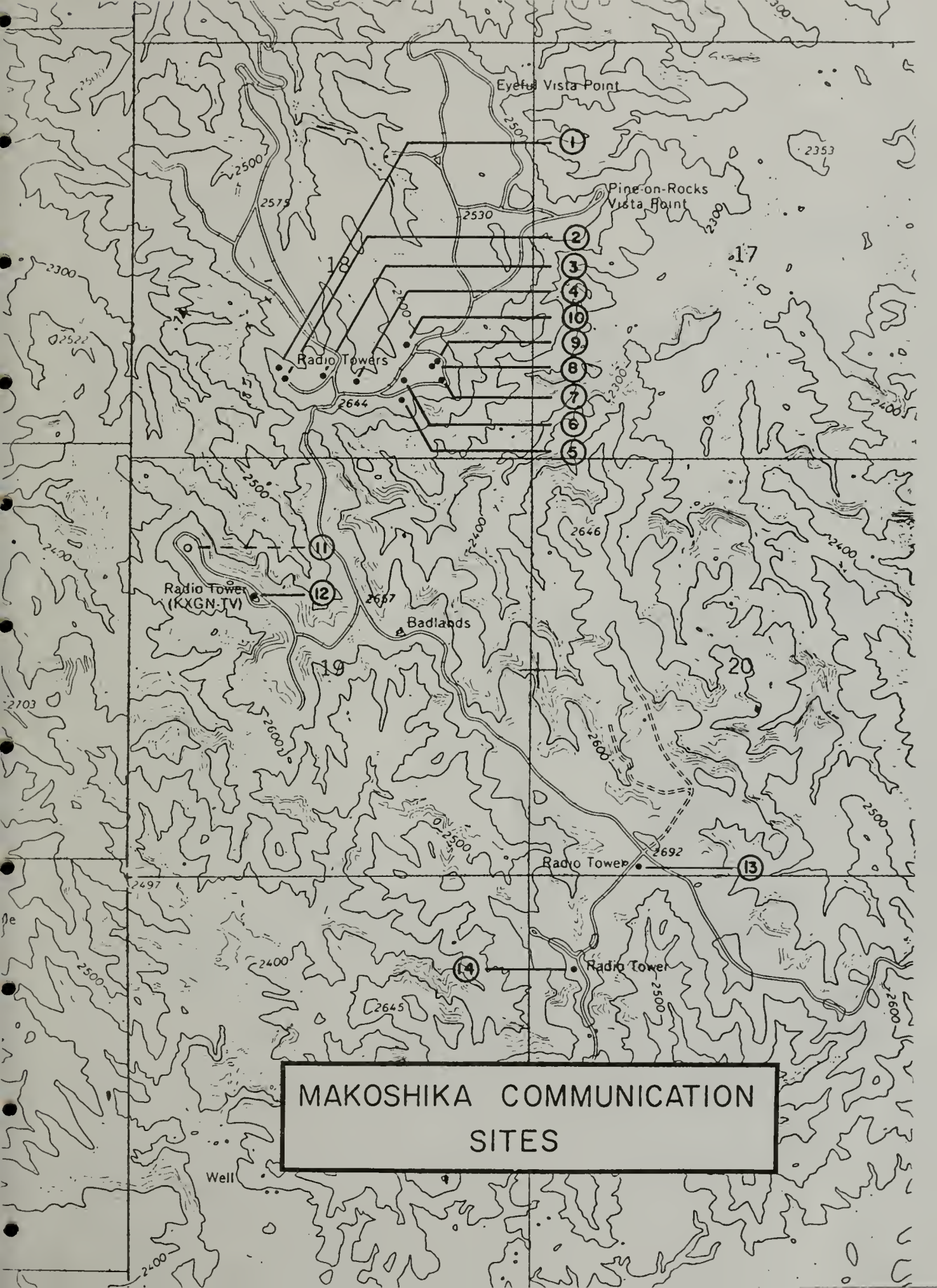
Total	Problems
20	Improve roads
15	Litter
13	Clean water
10	Better enforcement
7	Signs showing trails, water overlooks
7	Road signs
7	Roads & signs from Glendive to park
6	Control grazing
5	More animals & care for them
4	Vandalism
44	Safety precautions
4	Roads bad when wet & icy, especially switchbacks
4	Telephones
4	Rattlesnakes
3	Don't want paved roads
2	Bike & motor trails
2	Like it as it is
2	More & better rest rooms
2	General improvement
2	All weather
2	Fishing area needed
2	Tourist center information
1	Others

APPENDIX G. INVENTORY OF COMMUNICATION SITES AND RELATED FACILITIES AT MAKOSHIKA STATE PARK
February 27, 1981

Map	Lessee/Address	Lessor/Permit No.	Lease Date/Exp. Date	Annual Fee	Acreage	Tower Height	Frequency	Max. Watts	Structure	Elevation	Previous Owners
1	MT Dept. of Highways Helena, MT 59601	BLM/MO2300 (½) DNRP - (½)	5/10/51 5/10/01 --	$ 0	.92	105 ft.	47.04 47.16	500	None req.	2,644 ft.	None
2	MT-Dak. Utilities 400 N. Fourth St. Bismarck, ND 58501	BLM/M 01323	1/10/51 1/10/01 Amended 2/1/63- 2/1/13	$150/yr	.203 Power- Line 8.95	105 ft.	48.26	500	None ment.	2,644 ft	MT-Wyo Gas Pipeline Co. 1951-55
3	Halliburton Oil Well Cementing Co. Drawer 1431 Duncan, Okla 73533	BLM/M 015404	2/31/51 3/31/05 6/ 2/55 6/ 1/05	$150/yr	1.19	290 ft.	47.44 (req. 49.74)	300	Housing for equip.	2,652	None
4	Daniel Oil Field Const., Inc. Allard % Sargent Box 1211 Glendive,MT 59330	BLM/M 054838	10/24/63 10/24/13	$150/yr	.67	100 ft	43.08 152.36	200	Transm. Sta. & receiving tower	2,680	Flcom 2-Way Radio Box 573, Glendive 1963-7/25/70
5	Dow Chemical (Dowell Div.) 2200 W. Loop South, Suite 601 Houston, Tex 77027	BLM/M 012104	9/5/63 9/4/13	$150/yr	.533	Antenna 290 ft. Tower 280 ft.	49.54 452.175 457.175	500	Transm. St.	2,730	None
6	Mountain States Tel & Tel. Co. 560 N. Park Ave. Helena, MT 59601	BLM/M 050137	12/7/62 12/6/12	$150/yr	.91	160 ft.	11285, 11525 133- 158.07	.5	Microwave & mobile radio sta.	2,788	None
7.	Glendive Broadcasting Corp. KXGN, 210 Douglas Glendive,MT 59330	BLM/M 013831	8/11/61 8/11/11 Not to exceed micro wave authorization	$150/yr	.23	15 ft.	7025- 7050	1.5	12'x12' passive reflector	2,655	None
8	Dept. of Police City of Glendive Glendive, MT 59330	BLM/M 011267	4/9/53 4/9/03 Indefinite	$85/yr Free	.2236	Antenna 107 ft. Tower 100 ft	39.82 39.88	200	Small Bldg. & Tower	2,655	Elcom Inc. 10/22/63 - 6/26/73 Butte Pipe Line Co. 4/9/53-10/22/63

APPENDIX G. (cont.)

9	Western Microwave, Inc. c/o Del Mathis 237 E. Main Bozeman, MT 59715	BLM/Appl. M 544 61% DFWP 39%	6/3/68 2/12/82	6/2/88	$150/yr $91.50/yr			152.3	110	Bldg & Tower	2.655	None, Applied for site on Hungry Joe in 1964
10	Suhr Transport c/o F.C. Weber Box 1727 Great Falls, MT	BLM/012107 0% DFWP 100%	11/2/53 1/1/73	12/31/72 4/27/81	270 total $150/yr	3.67		44 47.64 151.955 153.05	300	2 Bldgs & Tower		Hi-Ball Contractors 1953-3/15/68
11	MT. Dept. Nat. Res. HIPLEX P.O. Box 1350 Miles City, MT 59301	Dawson Co.	6/20/79	Removed in 1981	Free		20 ft					None
12	Gldv Broadcasting Corp. KXGN, 210 S. Douglas Glendive, MT. 59330	Dawson Co-Purchase	1/5/62 12/4/63		$10 $1	.38 Easement		CH 5 15,000 ERP		Fenced tower & bldg.		None
13	Billings Area Ofc. Western Area Power Admin. Dept. of Energy Billings, MT 59101	Lions Club-Purchase				4.13	150 ft	11,28,32, 33	100	Tower & Bldg.	2,692	None
14	Glendive Community Hospital Prospect Drive Glendive, MT 59330	Dawson Co.-Purchase				3.67	150 ft			Tower & Bldg	2,692	Dept. of Energy


Eyeful Vista Point
Pine-on-Rocks Vista Point
Radio Towers
Radio Tower (KXGN-TV)
Badlands
Radio Tower
Radio Tower
Well
1
2
3
4
5
6
7
8
9
10
11
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2353
2530
2644
2646
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2645
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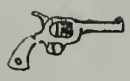
MAKOSHIKA COMMUNICATION SITES

APPENDIX H. Public Use Regulations

WEAPONS



a Persons shall not discharge any firearm, fireworks, air or gas weapon, or arrow from a how, on or over either land or water from April 1 to the opening datn of archery season each year, unless otherwise posted

PETS

b No person shall permit a pet animal to run at large in a designated public recreation area, but must restrain all pet animals and keep them under control on a 15 foot leash which is in hand or anchored at all times, from April 1 through September 15 of each year

MOTOR VEHICLES

c. Motor vehicles shall be driven at a speed no greater than the posted speed

d Motor vehicles shall not be driven off authorized roads, except onto parking areas provided

e. Any vehicles, trailor or camper must be parked in designated parking areas No person shall pitch a tent or otherwise set up camp other than in designated camping areas

f. No person shall operate over-the-snow equipment in any area which is specifically posted against such operation

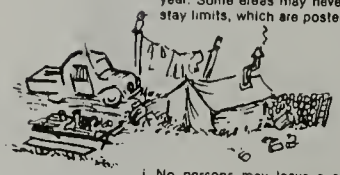
CAMPING

g No person shall camp overnight in a state administered recreation area without obtaining an overnight camping permit or having a seasonal camping permit decal attached to the rear left glass of his vehicle, when such area has been signed and posted as a fee camping area. The seasonal decal is available to Montana residents at $35 per year, per vehicle and entitles the occupants of the vehicle to camp overnight without payment of further fee. Persons using a vehicle without a current seasonal decal attached or persons not using a vehicle will pay either $3 or $5 per night according to the specified fee. Groups shall be charged at a rate of one daily fee for each six persons or fraction thereof for each overnight camping use.

A $1.00 lifetime camping decal is available to Montana residents over 85 years of age

h Groups of more than 30 persons may use a state administered recreation area only with prior permission by the Director or his agent

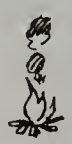
i. No person or persons shall be permitted to maintain occupancy of camping facilities or space in any one designated recreation area for a period longer than 14 days during any 30-day period Such 30-day periods shall run consecutively during the year commencing with the first day each person camps in the designated recreation area each year. Some areas may have shorter stay limits, which are posted.



j No persons may leave a camp or vehicle unattended for more than 48 hours unless area otherwise posted

k. Overnight camping is not allowed in any state-owned shelter building

FIRES



l. To lessen fire danger, do not build or maintain a fire in any designated recreation area, except in established fireplaces and fire rings maintained for such purposes, or in portable camp stoves Exception Certain areas may be posted allowing fires to be built in other than the above mentioned places

m. Do not leave a camping area without completely extinguishing all fires

PROPERTY DISTURBANCE

n No person shall destroy, deface, injure, remove or otherwise damage any natural or improved property or shall willfully or negligently cut, destroy or mutilate any tree, shrub or plant or any geological, historical, or archaeological feature but this shall not be interpreted to include flowers, berries, cones or dead wood.

o. Do not disturb or remove the topsoil cover This prohibits digging for worms, burying garbage and allowing pets to dig holes

DISORDERLY CONDUCT

p. Disorderly conduct such as drunkenness, use of vile or profane language, fighting, indecent exposure, or operation of a motor vehicle in a manner as to create a nuisance or annoyance to others or loud or noisy behavior during the hours of darkness is prohibited, and in addition to any other penalty provided, the participant may be expelled from the area

RESTRICTED AREAS

q People may not enter upon any portion of any area that is posted as restricted to public passage

NIGHT CLOSURE

r Some areas, as posted, may be closed nightly except for emergency traffic

WASTE DISPOSAL

s Do not dump dead fish or animals or parts thereof, human excrement, refuse rubbish or wash water (except in receptables provided for this purpose) nor pollute or litter in any other manner a public recreational area Sewage from self-contained toilet units must be disposed of only in sanitary trailer dump stations

LIVESTOCK

t Livestock may not graze in any area properly fenced to restrict the passage of livestock, unless the area is specifically leased to the owner of the livestock for grazing

COMMERCIAL USE

u These lands may not be used for any commercial purpose without first securing permission from the Commission.

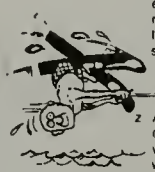
v Commercial or political signs shall not be posted.

BOATS AND SWIMMING

w Boats launched from any boat trailer, car, truck or other conveyance must be launched at an established launching area if such a facility is provided

x Swimming areas when designated are limited by orange and white buoys. No person shall disturb, deface, remove or relocate such buoys unless authorized by the State Fish, Wildlife and Parks Director or his agent

y No power boat shall be operated or beached within a designated swimming area, nor shall be operated, with motor in operation, so that any portion of such boat approaches closer than 20 feet to any swimmer in the water The term "swimmer" as used herein shall not mean any water skier, then engaged in water skiing and using said boat as a use of towing power. This regulation is applicable only in water areas which are within 100 feet of the nearest shoreline and shall not apply to emergency or lifesaving situations



z Any operator of a power boat shall not tow any water skier so that such water skier is caused to approach within 20 feet of any swimmer in the water No water skier, while afloat on his water skis, shall approach any swimmer in the water within 20 feet or water ski within the bounds of any designated swimming area